

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF  
Edition : 01.03.93  
Replaces : 03.92  
Test oil : ISO-4113

Combination no. : 0 402 646 972

Injection pump  
Pump designation : PE6P120A32ORS7218  
EP type number : 0 412 626 839  
Governor  
Governor design. : RQV275...1000PA939-2  
Governor no. : 0 421 813 986

Customer-spec. information  
Customer : DAF

Engine : WS 268 L

1st version kW : 268.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 95...115

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test Lines : 1 680 750 089

Outside diameter  
x Wall thickness : 8.00x2.50x600  
x Length mm

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.30...5.40  
: (5.25...5.45)  
Rack travel in mm : 14.00...15.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10  
& maximum rack tra: 14.5...15.5  
Difference ° CS : 2.25...3.75

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 14.80...14.90

Del.quantity cm<sup>3</sup>/ : 23.0...23.2

100 s: (22.7...23.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 6.1...6.3

Del.quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1045  
travel mm : 7.70...8.20

2nd speed rpm : 275  
travel mm : 1.10...1.60

3rd speed rpm : 380  
travel mm : 2.40...2.90

4th speed rpm : 675  
travel mm : 4.20...4.70

5th speed rpm : 1310  
travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1  
Speed rpm : 1125  
Rack travel in mm : 13.60...16.20

#### FULL LOAD DELIV. AT FULL LOAD STOP

##### 1st version

Speed rpm : 850  
Aneroid pressure h: 1000  
Del.quantity : 230.0...232.0  
1000 : (227.0...235.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

##### 1st version

Control lever  
position degrees: 116...124

##### Testing:

1st rack travel in: 13.80  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1250  
Speed rpm : 0.00...1.40

#### LOW IDLE 1

Control lever  
position degrees: 78...86

##### Testing:

Speed rpm : 175  
Minimum rack travel: 7.50  
Speed rpm : 275  
Rack travel in mm : 4.90...5.10

#### CONSTANT REGULATION

Speed rpm : 300...350

#### Aneroid/Altitude Compensator Test

##### 1st version

##### Setting

Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 14.80...14.90

##### Measurement

Speed 1/min : 600

1st pressure hPa : -

Rack travel in m: 12.20...12.40

2nd pressure hPa : 490

Rack travel in m: 14.20...14.30

3rd pressure hPa : 280

Rack travel in m: 12.80...13.00

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: -

Speed rpm : 600

Del.quantity cm3/ : 158.0...160.0  
1000 s: (155.0...163.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 13.80

Speed rpm : 1040...1050

#### LOW IDLE

Speed rpm : 275

Rack travel in mm : 4.90...5.10

Remarks:

:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF  
Edition : 26.02.93  
Replaces : 03.92  
Test oil : ISO-4113  
  
Combination no. : 0 402 646 973  
  
Injection pump  
Pump designation : PE6P120A32ORS7218Z  
EP type number : 0 412 626 847  
Governor  
Governor design. : RQ275/1000PA936-2  
Governor no. : 0 421 801 633

Customer spec. information  
Customer : DAF

Engine : WS 242 L

1st version kW : 268.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.30...5.40  
(5.25...5.45)  
Rack travel in mm : 14.00...15.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10  
& maximum rack tra: 13.5...14.5  
Difference ° CS : 2.20...3.75

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 13.80...13.90

Del.quantity cm3/ : 20.5...20.7

100 s: (20.2...21.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0  
Rack travel in mm : 6.0...6.2  
Del.quantity cm3/ : 1.4...2.0  
100 s: (1.1...2.3)  
Spread cm3 : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.60...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 850  
Aneroid pressure h: 1000  
Del.quantity : 205.0...207.0  
1000 : (202.0...210.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 550  
Rack travel in mm : 16.0

Testing:

1st rack travel in: 12.80  
Speed rpm : 1035...1050  
2nd rack travel in: 4.00  
Speed rpm : 1120...1150  
4th rack travel in: 1250  
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 275  
Rack travel in mm : 5.0

Testing:

Speed rpm : 175  
Minimum rack travel: 6.50  
Speed rpm : 275  
Rack travel in mm : 4.90...5.10  
Rack travel in mm : 2.00  
Speed rpm : 330...370

TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 850  
Rack travel in m: 14.80...14.90  
2nd speed rpm : 1000  
Rack travel in m: 14.70...14.90

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 13.80...13.90

Measurement

Speed 1/min : 600

1st pressure hPa : -

Rack travel in m: 11.70...11.90  
2nd pressure hPa : 420  
Rack travel in m: 13.30...13.40  
3rd pressure hPa : 260  
Rack travel in m: 12.20...12.40

FUEL DELIVERY CHARACTERISTICS

1st version

A04

Aneroid pressure h: -

Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 147.0...149.0  
1000 s: (144.0...152.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.80  
Speed rpm : 1035...1050

LOW IDLE

Speed rpm : 275  
Rack travel in mm : 4.90...5.10

Remarks:

:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF  
Edition : 01.03.93  
Replaces : 03.92  
Test oil : ISO-4113

Combination no. : 0 402 646 974

Injection pump  
Pump designation : PE6P120A320RS7218  
EP type number : 0 412 626 839  
Governor  
Governor design. : RQ275/1000PA936-2  
Governor no. : 0 421 801 633

Customer-spec. information  
Customer : DAF

Engine : WS 268 L

1st version kW : 268.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 95...115

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.30...5.40  
: (5.25...5.45)  
Rack travel in mm : 14.00...15.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10  
& maximum rack tra: 14.5...15.5  
Difference ° CS : 2.25...3.75

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 14.80...14.90

Del.quantity cm<sup>3</sup>/ : 23.0...23.2

100 s: (22.7...23.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 275.0  
Rack travel in mm : 6.1...6.3  
Del.quantity cm<sup>3</sup>/ : 1.4...2.0  
100 s: (1.1...2.3)  
Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.60...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 850  
Aneroid pressure h: 1000  
Del.quantity : 230.0...232.0  
1000 : (227.0...235.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

### 1st version

#### Setting point:

Speed rpm : 550  
Rack travel in mm : 16.0

#### Testing:

1st rack travel in: 13.80  
Speed rpm : 1035...1050  
2nd rack travel in: 4.00  
Speed rpm : 1140...1170  
4th rack travel in: 1250  
Speed rpm : 0.00...1.40

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 275  
Rack travel in mm : 5.0

#### Testing:

Speed rpm : 175  
Minimum rack trave: 6.50  
Speed rpm : 275  
Rack travel in mm : 4.90...5.10  
Rack travel in mm : 2.00  
Speed rpm : 330...370

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 850  
Rack travel in m: 15.30...15.40  
2nd speed rpm : 1000  
Rack travel in m: 15.20...15.40

#### Aneroid/Altitude Compensator Test

#### 1st version

##### Setting

Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 14.80...14.90

##### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 12.20...12.40  
2nd pressure hPa : 490  
Rack travel in m: 14.20...14.30  
3rd pressure hPa : 280  
Rack travel in m: 12.80...13.00

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

A06

Aneroid pressure h: -

Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 158.0...160.0  
1000 s: (155.0...163.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 13.80  
Speed rpm : 1035...1050

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 4.90...5.10

#### Remarks:

:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : SCA  
Edition : 15.06.93  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 646 995  
Injection pump  
Pump designation : PE6P120A720RS7188  
EP type number : 0 412 626 832  
Governor  
Governor design. : RQV200...950PA725-10  
Governor no. : 0 421 814 002

Customer-spec. information  
Customer : SCANIA

Engine : DSC 11 33

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
Overflow valve : 1 417 413 025  
Inlet press., bar : 2.50  
Test nozzle holder  
assembly : 1 688 901 104  
Opening  
pressure, bar : 250...253  
Orifice plate  
diameter mm : 0,7

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50  
: (4.35...4.55)  
Rack travel in mm : 9.00...12.00

A07

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.40...13.50

Del.quantity cm<sup>3</sup>/ : 23.8...24.0

100 s: (23.5...24.3)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

2nd speed rpm : 250.0

Rack travel in mm : 4.6...5.0

Del.quantity cm<sup>3</sup>/ : 1.3...1.9

100 s: (1.0...2.2)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 225  
travel mm : 1.20...1.60

2nd speed rpm : 350  
travel mm : 2.40...3.00

3rd speed rpm : 650  
travel mm : 4.50...5.10

4th speed rpm : 1045  
travel mm : 8.40...8.60

5th speed rpm : 1125  
travel mm : 9.30...9.70

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 7.00...12.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1500

Del.quantity : 238.0...240.0

1000 : (235.0...243.0)

Spread cm3 : 8.00  
1000 : (12.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 110...118

Testing:  
1st rack travel in: 12.40  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1110...1140  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 60...68

Testing:  
Speed rpm : 125  
Minimum rack travel: 6.20  
Speed rpm : 250  
Rack travel in mm : 4.60...4.80  
Rack travel in mm : 2.00  
Speed rpm : 370...430

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1500  
Rack travel mm : 13.40...13.50

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.20...10.60  
2nd pressure hPa : 440  
Rack travel in m: 12.00...12.10  
3rd pressure hPa : 270  
Rack travel in m: 10.90...11.10

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1500  
Speed rpm : 950  
Del.quantity cm3/ : 218.0...226.0  
1000 s: (216.0...228.0)  
Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm3/ : 151.0...155.0  
1000 s: (149.0...157.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.40  
Speed rpm : 990...1000

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 145.0...185.0  
1000 s: (141.0...189.0)  
Rack travel in mm : 10.20...10.60

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.60...4.80

Remarks:  
Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring  
preload on new delivery-valve holders  
to 2.9...3.1 mm.

Start-of-delivery setting with ROBO  
diaphragm.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : SCA 14,0 h1  
Edition : 21.06.93  
Replaces : 07.02.89  
Test oil : ISO-4113

Combination no. : 0 402 648 836

Injection pump  
Pump designation : PE8P120A920/4LS7125T  
EP type number : 0 412 628 824  
Governor  
Governor design. : RQV200...950PA736-4  
Governor no. : 0 421 813 646

Customer-spec. information  
Customer : SAAB-SCANIA

Engine : DSC14 03 L09,L10

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
: (4.95...5.15)  
Rack travel in mm : 9.00...12.00

A09

Firing order : 1- 2- 7- 3- 4- 5-  
6- 8

Phasing : 0-45-90-135-180-225-  
270-315  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700  
Rack travel in mm : 13.80...13.90  
Del.quantity cm3/ : 22.1...22.3  
100 s: (21.8...22.6)  
Spread cm3 : 0.6  
100 s: (0.9)

2nd speed rpm : 225.0  
Rack travel in mm : 4.9...5.3  
Del.quantity cm3/ : 1.6...2.0  
100 s: (-)  
Spread cm3 : 0.3  
100 s: (0.6)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 225  
travel mm : 1.20...1.60  
2nd speed rpm : 350  
travel mm : 2.30...2.90  
3rd speed rpm : 650  
travel mm : 4.40...5.00  
4th speed rpm : 995  
travel mm : 7.70...7.90  
5th speed rpm : 1125  
travel mm : 9.30...9.70

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1040  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 700  
Aneroid pressure h: 900  
Del.quantity : 221.0...223.0  
1000 : (218.0...226.0)

Spread cm<sup>3</sup> : 6.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 56...64

Testing:  
1st rack travel in: 12.80  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1110...1140  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 7...15

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.50  
Speed rpm : 225  
Rack travel in mm : 4.90...5.10  
Rack travel in mm : 2.00  
Speed rpm : 360...420

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.80...13.90

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.60...11.00  
2nd pressure hPa : 445  
Rack travel in m: 12.90...13.00  
3rd pressure hPa : 325  
Rack travel in m: 11.40...11.60

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 950  
Del.quantity cm<sup>3</sup>/ : 211.0...219.0  
1000 s: (209.0...221.0)  
Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 138.0...142.0  
1000 s: (136.0...144.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.80  
Speed rpm : 990...1000

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 240.0...290.0  
1000 s: (-)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 225  
Rack travel in mm : 4.90...5.10

#### Remarks:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring  
preload on new delivery-valve holders  
to 2.9...3.1 mm.

#### ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO  
diaphragm.

For comb. with letter index see  
VDT-I-400/116.

For sealing see VDT-I-400/117.

Start of delivery - engine: 16° before  
TDC

Engine firing sequence: 1-5-4-2-6-3-7-8

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 r  
Edition : 15.06.93  
Replaces : 12.92  
Test oil : ISO-4113

Combination no. : 0 402 736 807

Injection pump  
Pump designation : PES6P110A120RS7214  
EP type number : 0 412 716 805  
Governor  
Governor design. : RQV350...1100PA964  
-1K  
Governor no. : 0 421 815 253

Customer-spec. information  
Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 201.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 047

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 115...125

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45  
: (4.30...4.50)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 15.80...15.90

Del.quantity cm<sup>3</sup>/ : 20.9...21.1

100 s: (20.6...21.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.7...5.9

Del.quantity cm<sup>3</sup>/ : 2.7...3.3

100 s: (2.5...3.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 1.80...2.00

2nd speed rpm : 450

travel mm : 3.10...3.50

3rd speed rpm : 600

travel mm : 5.10...5.50

4th speed rpm : 1000

travel mm : 8.10...8.30

5th speed rpm : 1200

travel mm : 9.60...10.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 1500

Del.quantity : 209.0...211.0

1000 : (206.0...214.0)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 64...72

Testing:  
1st rack travel in: 14.50  
Speed rpm : 1145...1155  
2nd rack travel in: 4.00  
Speed rpm : 1300...1330  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 11...19

Testing:  
Speed rpm : 275  
Minimum rack travel: 7.20  
Speed rpm : 350  
Rack travel in mm : 5.70...5.90

CONSTANT REGULATION  
Speed rpm : 325...520

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 15.80...15.90  
2nd speed rpm : 650  
Rack travel in m: 13.20...13.60  
3rd speed rpm : 1100  
Rack travel in m: 15.50...15.70

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 1050  
Pressure hPa : 1500  
Rack travel mm : 15.80...15.90

Measurement  
Speed 1/min : 1050

1st pressure hPa : -  
Rack travel in m: 8.10...8.50  
2nd pressure hPa : 335  
Rack travel in m: 10.10...10.20  
3rd pressure hPa : 845  
Rack travel in m: 13.60...14.00

#### START CUT-OUT

Speed 1/min : 290 (300)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1500  
Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 190.5...196.5  
1000 s: (187.5...199.5)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 91.0...95.0  
1000 s: (89.0...97.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 14.50  
Speed rpm : 1145...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...175.0  
1000 s: (130.0...180.0)  
Rack travel in mm : 11.00...12.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.70...5.90  
Del.quantity cm<sup>3</sup>/ : 27.0...33.0  
1000 s: (25.0...35.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

: C.D.C. # 3921771

Start-of-delivery mark = 5.5° after  
start of delivery cyl. 1.

Bow dimension:  
Sliding-sleeve position = 37.0 mm



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 r 1  
Edition : 15.06.93  
Replaces : 05.92  
Test oil : ISO-4113

Combination no. : 0 402 736 814

Injection pump  
Pump designation : PES6P110A120RS7214  
EP type number : 0 412 716 805  
Governor  
Governor design. : RQV350...1200PA964  
-6K  
Governor no. : 0 421 815 258

Customer-spec. information  
Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 187.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 115...125

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45  
(4.30...4.50)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1200  
Rack travel in mm : 14.50...14.60  
Del.quantity cm3/ : 18.3...18.5  
100 s: (18.0...18.8)

Spread cm3 : 0.5  
100 s: (0.9)

2nd speed rpm : 350.0  
Rack travel in mm : 5.4...5.6  
Del.quantity cm3/ : 2.7...3.3  
100 s: (2.5...3.5)  
Spread cm3 : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 1.80...2.00  
2nd speed rpm : 450  
travel mm : 3.10...3.50  
3rd speed rpm : 700  
travel mm : 5.90...6.30  
4th speed rpm : 1200  
travel mm : 9.00...9.20  
5th speed rpm : 1400  
travel mm : 10.70...11.10

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1200  
Aneroid pressure h: 1200  
Del.quantity : 183.0...185.0  
1000 : (180.0...188.0)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 62...70

Testing:  
1st rack travel in: 13.50  
Speed rpm : 1245...1255  
2nd rack travel in: 4.00  
Speed rpm : 1405...1435  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 11...19

Testing:  
Speed rpm : 275  
Minimum rack travel: 7.20  
Speed rpm : 350  
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION  
Speed rpm : 325...520

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 14.50...14.60  
2nd speed rpm : 650  
Rack travel in m: 11.40...11.80

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 1200  
Pressure hPa : 1200  
Rack travel mm : 14.50...14.60

Measurement  
Speed 1/min : 1200

1st pressure hPa : -  
Rack travel in m: 7.50...7.90  
2nd pressure hPa : 320  
Rack travel in m: 9.60...9.70  
3rd pressure hPa : 860  
Rack travel in m: 13.30...13.70

#### START CUT-OUT

Speed 1/min : 290 (300)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 165.5...171.5  
1000 s: (162.5...174.5)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 86.5...90.5  
1000 s: (84.5...92.5)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.50  
Speed rpm : 1245...1255

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...175.0  
1000 s: (130.0...180.0)  
Rack travel in mm : 10.70...11.70

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.40...5.60  
Del.quantity cm<sup>3</sup>/ : 27.0...33.0  
1000 s: (25.0...35.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:  
: C.D.C. # 3921775

Start-of-delivery mark = 5.5° after  
start of delivery cyl. 1.

Bow dimension:  
Sliding-sleeve position = 37.0 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM  
Edition : 15.06.93  
Replaces : 03.93  
Test oil : ISO-4113

Combination no. : 0 402 736 834

Injection pump  
Pump designation : PES6P120A120RS7265  
EP type number : 0 412 726 882  
Governor  
Governor design. : RQV350...1100PA964  
-12K  
Governor no. : 0 421 815 323

Customer-spec. information  
Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 186.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 086

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 103

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,7

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X3.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 3.95...4.05  
: (3.90...4.10)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.90...14.00

Del.quantity cm3/ : 21.1...21.3

100 s: (20.8...21.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 6.4...6.8

Del.quantity cm3/ : 2.0...2.6

100 s: (1.8...2.8)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 2.10...2.40

2nd speed rpm : 450  
travel mm : 3.20...3.60

3rd speed rpm : 900  
travel mm : 5.60...6.00

4th speed rpm : 1200  
travel mm : 8.10...8.30

5th speed rpm : 1400  
travel mm : 10.20...10.60

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1200

Del.quantity : 211.5...213.5

1000 : (208.5...216.5)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version

Control lever  
position degrees: 58...66

Testing:

1st rack travel in: 12.40  
Speed rpm : 1245...1275  
2nd rack travel in: 4.00  
Speed rpm : 1390...1400  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 13...21

Testing:

Speed rpm : 275  
Minimum rack travel: 8.30  
Speed rpm : 350  
Rack travel in mm : 6.40...6.80

#### CONSTANT REGULATION

Speed rpm : 325...520

#### TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 13.90...14.00  
2nd speed rpm : 650  
Rack travel in m: 12.00...12.40  
3rd speed rpm : 1200  
Rack travel in m: 13.40...13.60  
4th speed rpm : 750  
Rack travel in m: 12.40...12.80

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 1100  
Pressure hPa : 1200  
Rack travel mm : 13.90...14.00

Measurement

Speed 1/min : 1100

1st pressure hPa : -  
Rack travel in m: 8.60...9.00  
2nd pressure hPa : 310  
Rack travel in m: 10.10...10.20  
3rd pressure hPa : 650

Rack travel in m: 12.40...12.80

#### START CUT-OUT

Speed 1/min : 290 (300)

#### FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 166.0...172.0  
1000 s: (163.0...175.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1200  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 175.0...181.0  
1000 s: (172.0...184.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 1000  
Del.quantity cm<sup>3</sup>/ : 82.5...86.5  
1000 s: (80.5...88.5)

#### BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 12.40  
Speed rpm : 1245...1275

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 180.0...220.0  
1000 s: (175.0...225.0)  
Rack travel in mm : 12.00...13.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.40...6.80  
Del.quantity cm<sup>3</sup>/ : 20.0...26.0  
1000 s: (18.0...28.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

: C.D.C. # 3922471

Start-of-delivery mark = 5.5° after  
start of delivery cyl. 1.

Bow dimension:

Sliding-sleeve position = 37.0 mm  
Delivery-valve spring pre-tension =  
6.30...6.40 mm.  
Permissible alteration from 6.00...6.70  
mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM  
Edition : 21.04.93  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 736 835

Injection pump  
Pump designation : PES6P120A120RS7265  
EP type number : 0 412 726 882  
Governor  
Governor design. : RQV350...900PA964  
-13K  
Governor no. : 0 421 815 324

Customer-spec. information  
Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 205.0  
Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 2 417 413 086

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 90...110

Test nozzle holder  
assembly : 1 688 901 103

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,7

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X3.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 3.95...4.05  
: (3.90...4.10)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 14.70...14.80

Del.quantity cm3/ : 24.3...24.5

100 s: (24.0...24.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 6.4...6.6

Del.quantity cm3/ : 1.8...2.4

100 s: (1.6...2.6)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 1.60...1.80

2nd speed rpm : 450  
travel mm : 3.00...3.40

3rd speed rpm : 600  
travel mm : 5.20...5.60

4th speed rpm : 1000  
travel mm : 8.40...8.60

5th speed rpm : 1150  
travel mm : 9.80...10.20

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 1200

Del.quantity : 243.0...245.0

1000 : (240.0...248.0)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 60...68

#### Testing:

1st rack travel in: 13.40  
Speed rpm : 1145...1175  
2nd rack travel in: 4.00  
Speed rpm : 1210...1220  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 12...20

#### Testing:

Speed rpm : 275  
Minimum rack travel: 8.10  
Speed rpm : 350  
Rack travel in mm : 6.40...6.60

#### CONSTANT REGULATION

Speed rpm : 325...520

#### TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 14.70...14.80  
2nd speed rpm : 650  
Rack travel in m: 13.80...14.20  
3rd speed rpm : 1000  
Rack travel in m: 14.40...14.60  
4th speed rpm : 750  
Rack travel in m: 14.10...14.50

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 1000  
Pressure hPa : 1200  
Rack travel mm : 14.70...14.80

#### Measurement

Speed 1/min : 1000

1st pressure hPa : -  
Rack travel in m: 10.20...10.60  
2nd pressure hPa : 310  
Rack travel in m: 11.40...11.50  
3rd pressure hPa : 650

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Rack travel in m: 13.20...13.60

#### START CUT-OUT

Speed 1/min : 290 (300)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 226.0...232.0  
1000 s: (223.0...235.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1200  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 230.5...236.5  
1000 s: (227.5...239.5)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 1000  
Del.quantity cm<sup>3</sup>/ : 90.5...94.5  
1000 s: (88.5...96.5)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 13.40  
Speed rpm : 1145...1175

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 180.0...220.0  
1000 s: (175.0...225.0)  
Rack travel in mm : 12.00...13.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.40...6.60  
Del.quantity cm<sup>3</sup>/ : 18.0...24.0  
1000 s: (16.0...26.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

: C.D.C. # 3922446

Start-of-delivery mark = 5.5° after  
start of delivery cyl. 1.

Bow dimension:

Sliding-sleeve position = 37.0 mm





# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM  
Edition : 15.06.93  
Replaces : 02.93  
Test oil : ISO-4113

Combination no. : 0 402 736 836

Injection pump  
Pump designation : PES6P120A120RS7265  
EP type number : 0 412 726 882  
Governor  
Governor design. : RGV350...1000PA964  
-14K  
Governor no. : 0 421 815 325

Customer-spec. information  
Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 205.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 086

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 90...110

Test nozzle holder  
assembly : 1 688 901 103

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,7

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X3.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 3.95...4.05  
: (3.90...4.10)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 14.50...14.60

Del.quantity cm3/ : 23.6...23.8

100 s: (23.3...24.1)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 6.0...6.2

Del.quantity cm3/ : 0.9...1.5

100 s: (0.7...1.7)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 1.80...2.00

2nd speed rpm : 450  
travel mm : 3.10...3.50

3rd speed rpm : 600  
travel mm : 5.10...5.50

4th speed rpm : 1000  
travel mm : 8.10...8.30

5th speed rpm : 1200  
travel mm : 9.60...10.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1200

Del.quantity : 236.0...238.0

1000 : (233.0...241.0)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 62...70

#### Testing:

1st rack travel in: 12.90  
Speed rpm : 1145...1175  
2nd rack travel in: 4.00  
Speed rpm : 1295...1305  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 12...20  
Rack travel in mm : 6.1

#### Testing:

Speed rpm : 275  
Minimum rack travel: 8.10  
Speed rpm : 350  
Rack travel in mm : 6.00...6.20

#### CONSTANT REGULATION

Speed rpm : 325...520

#### TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 14.50...14.60  
2nd speed rpm : 650  
Rack travel in m: 13.10...13.50  
3rd speed rpm : 1100  
Rack travel in m: 13.90...14.10  
4th speed rpm : 750  
Rack travel in m: 13.40...13.80

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 1000  
Pressure hPa : 1200  
Rack travel mm : 14.50...14.60

#### Measurement

Speed 1/min : 1000

1st pressure hPa : -  
Rack travel in m: 8.80...9.20  
2nd pressure hPa : 400  
Rack travel in m: 10.30...10.40

3rd pressure hPa : 880  
Rack travel in m: 12.90...13.30

#### START CUT-OUT

Speed 1/min : 290 (300)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 203.5...209.5  
1000 s: (200.5...212.5)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1200  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 209.5...215.0  
1000 s: (206.5...218.5)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 1000  
Del.quantity cm<sup>3</sup>/ : 88.0...92.0  
1000 s: (86.0...94.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 12.90  
Speed rpm : 1145...1175

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 180.0...220.0  
1000 s: (175.0...225.0)  
Rack travel in mm : 12.00...13.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.00...6.20  
Del.quantity cm<sup>3</sup>/ : 9.5...15.5  
1000 s: (7.5...17.5)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

: C.D.C. # 3922427

Start-of-delivery mark = 5.5° after  
start of delivery cyl. 1.

Bow dimension:  
Sliding-sleeve position = 37.0 mm



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM  
Edition : 15.06.93  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 736 842  
  
Injection pump  
Pump designation : PES6P120A120RS7281  
EP type number : 0 412 726 890  
Governor  
Governor design. : RQV400...1250PA1060K  
Governor no. : 0 421 815 344

Customer-spec. information  
Customer : C.D.C.

Engine : 6BTA-A

1st version kW : 119.0  
Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 047

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 105...125

Test nozzle holder  
assembly : 1 688 901 103

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,7

Test Lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X3.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 3.55...3.65  
: (3.50...3.70)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 13.40...13.50

Del. quantity cm<sup>3</sup>/ : 15.7...15.9

100 s: (15.4...16.2)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

2nd speed rpm : 400.0

Rack travel in mm : 6.0...6.4

Del. quantity cm<sup>3</sup>/ : 1.5...2.1

100 s: (1.3...2.3)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 400

travel mm : 1.40...1.60

2nd speed rpm : 550

travel mm : 2.50...2.90

3rd speed rpm : 800

travel mm : 4.00...4.40

4th speed rpm : 1250

travel mm : 6.90...7.10

5th speed rpm : 1500

travel mm : 9.10...9.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h: 1200

Del. quantity : 157.0...159.0

1000 : (154.0...162.0)

Spread cm<sup>3</sup> : 8.00  
1000 : (12.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 58...66

#### Testing:

1st rack travel in: 12.40  
Speed rpm : 1320...1330  
2nd rack travel in: 4.00  
Speed rpm : 1465...1495  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 12...20

#### Testing:

Speed rpm : 275  
Minimum rack travel: 7.80  
Speed rpm : 400  
Rack travel in mm : 6.00...6.40

#### CONSTANT REGULATION

Speed rpm : 325...520

#### TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 13.40...13.50  
2nd speed rpm : 800  
Rack travel in m: 11.60...12.00  
3rd speed rpm : 500  
Rack travel in m: 11.40...11.80  
4th speed rpm : 900  
Rack travel in m: 12.00...12.40

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 1250  
Pressure hPa : 1200  
Rack travel mm : 13.40...13.50

##### Measurement

Speed 1/min : 1250

1st pressure hPa : -  
Rack travel in m: 10.30...10.70  
2nd pressure hPa : 265  
Rack travel in m: 11.10...11.20  
3rd pressure hPa : 440

A25

Rack travel in m: 12.50...12.90

#### START CUT-OUT

Speed 1/min : 250 (260)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 1200  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 124.5...130.5  
1000 s: (121.5...133.5)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1200  
Speed rpm : 900  
Del.quantity cm<sup>3</sup>/ : 137.5...143.5  
1000 s: (134.5...146.5)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 1250  
Del.quantity cm<sup>3</sup>/ : 108.5...112.5  
1000 s: (106.5...114.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than  
full load rack tr: 12.40  
Speed rpm : 1320...1330

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...175.0  
1000 s: (130.0...180.0)  
Rack travel in mm : 13.00...14.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 6.00...6.40  
Del.quantity cm<sup>3</sup>/ : 15.0...21.0  
1000 s: (13.0...23.0)  
Spread cm<sup>3</sup> : 4.00  
1000 s: (8.00)

#### Remarks:

: C.D.C. # 3925085  
Start-of-delivery blocking 5,75° after  
start of delivery of cylinder no. 1.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM  
Edition : 15.06.93  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 736 845  
Injection pump  
Pump designation : PES6P12DA12ORS7286  
EP type number : 0 412 726 894  
Governor  
Governor design. : RQV350...1100PA964  
-20K  
Governor no. : 0 421 815 352

Customer-spec. information  
Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 224.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 086

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 95...115

Test nozzle holder  
assembly : 1 688 901 103

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,7

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X3.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 3.95...4.05  
: (3.90...4.10)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 15.00...15.10

Del.quantity cm3/ : 24.9...25.1

100 s: (24.6...25.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 6.4...6.8

Del.quantity cm3/ : 1.8...2.4

100 s: (1.6...2.6)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 2.10...2.40

2nd speed rpm : 450  
travel mm : 3.20...3.60

3rd speed rpm : 900  
travel mm : 5.60...6.00

4th speed rpm : 1200  
travel mm : 8.10...8.30

5th speed rpm : 1400  
travel mm : 10.20...10.60

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1200

Del.quantity : 249.0...251.0

1000 : (246.0...254.0)

Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 61...69

#### Testing:

1st rack travel in: 13.30  
Speed rpm : 1250...1280  
2nd rack travel in: 4.00  
Speed rpm : 1395...1405  
4th rack travel in: 1475  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 14...22

#### Testing:

Speed rpm : 275  
Minimum rack travel: 7.70  
Speed rpm : 350  
Rack travel in mm : 6.40...6.80

#### CONSTANT REGULATION

Speed rpm : 325...520

#### TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 15.00...15.10  
2nd speed rpm : 650  
Rack travel in m: 13.30...13.70  
3rd speed rpm : 1200  
Rack travel in m: 14.30...14.50  
4th speed rpm : 750  
Rack travel in m: 13.60...14.00

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 1100  
Pressure hPa : 1200  
Rack travel mm : 15.00...15.10

#### Measurement

Speed 1/min : 1100

1st pressure hPa : -  
Rack travel in m: 9.10...9.50  
2nd pressure hPa : 345  
Rack travel in m: 10.80...10.90  
3rd pressure hPa : 725

Rack travel in m: 13.40...13.80

#### START CUT-OUT

Speed 1/min : 290 (300)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 650  
Del.quantity cm3/ : 209.0...215.0  
1000 s: (206.0...218.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1200  
Speed rpm : 750  
Del.quantity cm3/ : 210.5...216.5  
1000 s: (207.5...219.5)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 1000  
Del.quantity cm3/ : 90.5...94.5  
1000 s: (88.5...96.5)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 13.30  
Speed rpm : 1250...1280

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 180.0...220.0  
1000 s: (175.0...225.0)  
Rack travel in mm : 12.00...13.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.40...6.80  
Del.quantity cm3/ : 18.0...24.0  
1000 s: (16.0...26.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

: C.D.C. # 3922425

Start-of-delivery blocking 6,5° after  
start of delivery of cylinder no. 1.

Bow dimension:

Sliding-sleeve position = 37.0 mm





# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : SAK  
Edition : 22.06.93  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 746 939  
Injection pump  
Pump designation : PES6P130A320RS7271  
EP type number : 0 412 736 804  
Governor  
Governor design. : RQV275...1500PA1049  
Governor no. : 0 421 814 032

Customer-spec. information  
Customer : SEATEK

Engine : 64/V9

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
Overflow valve : 1 417 413 025  
Inlet press., bar : 1.50  
Test nozzle holder  
assembly : 1 688 901 105  
Opening  
pressure, bar : 207...210  
Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50  
: (4.35...4.55)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1500  
Rack travel in mm : 10.40...10.50  
Del.quantity cm3/ : 31.9...32.1  
100 s: (31.6...32.4)  
Spread cm3 : 0.5  
100 s: (0.9)

2nd speed rpm : 450  
Rack travel in mm : 2.8...3.2  
Del.quantity cm3/ : 2.0...2.6  
100 s: (1.7...2.9)  
Spread cm3 : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1550  
travel mm : 8.10...8.30  
2nd speed rpm : 450  
travel mm : 0.90...1.10  
3rd speed rpm : 700  
travel mm : 2.70...3.30  
4th speed rpm : 1050  
travel mm : 4.50...5.10  
5th speed rpm : 1750  
travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1575  
Rack travel in mm : 8.10...10.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1500  
Aneroid pressure h: 1000  
Del.quantity : 319.0...321.0  
1000 : (316.0...324.0)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 102...110

#### Testing:

1st rack travel in: 9.40  
Speed rpm : 1540...1550  
2nd rack travel in: 4.00  
Speed rpm : 1630...1660  
4th rack travel in: 1750  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 64...72

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.20  
Speed rpm : 450  
Rack travel in mm : 2.90...3.10  
Rack travel in mm : 2.00  
Speed rpm : 460...500

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 10.40...10.50

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 6.30...6.50  
2nd pressure hPa : 300  
Rack travel in m: 9.40...9.50  
3rd pressure hPa : 185  
Rack travel in m: 7.20...7.60

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 138.0...142.0  
1000 s: (135.0...145.0)

#### BREAKAWAY

B02

1st version  
1mm rack travel less than

full load rack tr: 9.40  
Speed rpm : 1540...1550

Remarks:

APPLICATION

Ship

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC  
Edition : 15.06.93  
Replaces : 01.93  
Test oil : ISO-4113

Combination no. : 0 402 746 940

Injection pump  
Pump designation : PES6P120A320LS7284  
EP type number : 0 412 726 891  
Governor  
Governor design. : RQV350...1000PA1054K  
Governor no. : 0 421 815 337

Customer-spec. information  
Customer : NAVISTAR

Engine : DTA-531

1st version kW : 224.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 076

Inlet press., bar : 2.80

Overflow  
quantity min. 1/h: 170...190

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 2.85...2.95  
: (2.80...3.00)  
Rack travel in mm : 14.00...17.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 14.30...14.40

Del.quantity cm<sup>3</sup>/ : 21.8...22.0

100 s: (21.5...22.3)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

2nd speed rpm : 350.0

Rack travel in mm : 5.7...5.9

Del.quantity cm<sup>3</sup>/ : 1.5...2.1

100 s: (1.3...2.3)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 1.40...1.60

2nd speed rpm : 500  
travel mm : 3.70...4.10

3rd speed rpm : 800  
travel mm : 6.80...7.20

4th speed rpm : 1000  
travel mm : 9.10...9.30

5th speed rpm : 1150  
travel mm : 11.20...11.60

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1000  
Aneroid pressure h: 1500  
Del.quantity : 218.0...220.0  
1000 : (215.0...223.0)

Spread cm<sup>3</sup> : 8.00  
1000 : (12.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 61...69

Testing:  
1st rack travel in: 13.30  
Speed rpm : 1045...1075  
2nd rack travel in: 4.00  
Speed rpm : 1170...1180  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 17...25

Testing:  
Speed rpm : 275  
Minimum rack travel: 7.20  
Speed rpm : 350  
Rack travel in mm : 5.70...5.90

CONSTANT REGULATION  
Speed rpm : 325...520

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 14.30...14.40  
2nd speed rpm : 650  
Rack travel in m: 14.20...14.40  
3rd speed rpm : 500  
Rack travel in m: 13.30...13.70

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 1000  
Pressure hPa : 1500  
Rack travel mm : 14.30...14.40

Measurement  
Speed 1/min : 1000

1st pressure hPa : -  
Rack travel in m: 9.90...10.30  
2nd pressure hPa : 380  
Rack travel in m: 11.30...11.40  
3rd pressure hPa : 900  
Rack travel in m: 13.10...13.50

#### START CUT-OUT

Speed 1/min : 265 (275)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1500  
Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 232.5...238.5  
1000 s: (229.5...241.5)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 99.0...103.0  
1000 s: (97.0...105.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.30  
Speed rpm : 1045...1075

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 125.0...165.0  
1000 s: (120.0...180.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.70...5.90  
Del.quantity cm<sup>3</sup>/ : 15.5...21.5  
1000 s: (13.5...23.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (9.00)

#### Remarks:

: NAVISTAR #1819915C91  
Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

Bow dimension:  
Sliding-sleeve position = 37.0 mm  
Delivery-valve spring pre-tension =  
6.30...6.40 mm.  
Permissible alteration from 6.00...6.70  
mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : NAV  
Edition : 15.06.93  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 746 941  
Injection pump  
Pump designation : PES6P120A320LS7284  
EP type number : 0 412 726 891  
Governor  
Governor design. : RQV350...1000PA1054  
-1K  
Governor no. : 0 421 815 338

Customer-spec. information  
Customer : NAVISTAR

Engine : DTA-531

1st version kW : 205.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 076

Inlet press., bar : 2.80

Overflow  
quantity min. 1/h: 190...210

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 2.85...2.95  
: (2.80...3.00)  
Rack travel in mm : 10.00...13.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 14.30...14.40

Del.quantity cm3/ : 21.5...21.7

100 s: (21.2...22.0)

Spread cm3 : 0.8

100 s: (1.2)

2nd speed rpm : 350.0

Rack travel in mm : 5.7...5.9

Del.quantity cm3/ : 1.5...2.1

100 s: (1.3...2.3)

Spread cm3 : 0.5

100 s: (0.9)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 1.40...1.60

2nd speed rpm : 500  
travel mm : 3.70...4.10

3rd speed rpm : 800  
travel mm : 6.80...7.20

4th speed rpm : 1000  
travel mm : 9.10...9.30

5th speed rpm : 1150  
travel mm : 11.20...11.60

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1000  
Aneroid pressure h: 1500  
Del.quantity : 215.0...217.0  
1000 : (212.0...220.0)

Spread cm<sup>3</sup> : 8.00  
1000 : (12.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 63...71

Testing:  
1st rack travel in: 13.30  
Speed rpm : 1040...1070  
2nd rack travel in: 4.00  
Speed rpm : 1170...1180  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 17...25

Testing:  
Speed rpm : 275  
Minimum rack travel: 7.50  
Speed rpm : 350  
Rack travel in mm : 5.70...5.90

CONSTANT REGULATION  
Speed rpm : 325...520

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 14.30...14.40  
2nd speed rpm : 650  
Rack travel in m: 14.00...14.20  
3rd speed rpm : 500  
Rack travel in m: 12.80...13.20

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 1000  
Pressure hPa : 1500  
Rack travel mm : 14.30...14.40

Measurement  
Speed 1/min : 1000

1st pressure hPa : -  
Rack travel in m: 9.90...10.30  
2nd pressure hPa : 370  
Rack travel in m: 11.10...11.20  
3rd pressure hPa : 880  
Rack travel in m: 12.90...13.30

#### START CUT-OUT

Speed 1/min : 265 (275)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1500  
Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 223.0...229.0  
1000 s: (220.0...232.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 99.0...103.0  
1000 s: (97.0...105.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.30  
Speed rpm : 1040...1070

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 125.0...165.0  
1000 s: (120.0...180.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.70...5.90  
Del.quantity cm<sup>3</sup>/ : 15.5...21.5  
1000 s: (13.5...23.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (9.00)

Remarks:

: NAVISTAR #1819916C91

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

Bow dimension:  
Sliding-sleeve position = 37.0 mm  
Delivery-valve spring pre-tension =  
6.30...6.40 mm.  
Permissible alteration from 6.00...6.70  
mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : NAV  
Edition : 21.04.93  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 746 946

Injection pump  
Pump designation : PES6P120A320LS7284  
EP type number : 0 412 726 891  
Governor  
Governor design. : RQV350...1100PA1066K  
Governor no. : 0 421 815 349

Customer-spec. information  
Customer : NAVISTAR

Engine : DTA-531

1st version kW : 222.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 076

Inlet press., bar : 2.80

Overflow  
quantity min. 1/h: 170...190

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 2.85...2.95  
: (2.80...3.00)  
Rack travel in mm : 10.00...13.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.80...13.90

Del.quantity cm3/ : 19.9...20.1

100 s: (19.6...20.4)

Spread cm3 : 0.8

100 s: (1.2)

2nd speed rpm : 350.0

Rack travel in mm : 5.7...5.9

Del.quantity cm3/ : 1.5...2.1

100 s: (1.3...2.3)

Spread cm3 : 0.5

100 s: (0.9)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 1.90...2.10

2nd speed rpm : 500

travel mm : 3.90...4.30

3rd speed rpm : 800

travel mm : 6.60...7.00

4th speed rpm : 1100

travel mm : 9.00...9.20

5th speed rpm : 1250

travel mm : 10.60...11.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1500

Del.quantity : 199.5...201.5

1000 : (196.5...204.5)

Spread cm<sup>3</sup> : 8.00  
1000 : (12.00)

#### RATED SPEED

1st version

Control lever  
position degrees: 61...69

#### Testing:

1st rack travel in: 12.80  
Speed rpm : 1140...1170  
2nd rack travel in: 4.00  
Speed rpm : 1275...1285  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 15...23

#### Testing:

Speed rpm : 275  
Minimum rack travel: 7.50  
Speed rpm : 350  
Rack travel in mm : 5.70...5.90

#### CONSTANT REGULATION

Speed rpm : 325...520

#### TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 13.80...13.90  
2nd speed rpm : 650  
Rack travel in m: 13.00...13.20  
3rd speed rpm : 500  
Rack travel in m: 12.20...12.60

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 1100  
Pressure hPa : 1500  
Rack travel mm : 13.80...13.90

#### Measurement

Speed 1/min : 1100

1st pressure hPa : -  
Rack travel in m: 9.30...9.70  
2nd pressure hPa : 330  
Rack travel in m: 10.60...10.70  
3rd pressure hPa : 840  
Rack travel in m: 12.40...12.70

#### START CUT-OUT

Speed 1/min : 280 (290)

#### FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500  
Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 198.5...204.5  
1000 s: (195.5...207.5)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 91.5...95.5  
1000 s: (89.5...97.5)

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.80  
Speed rpm : 1140...1170

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 125.0...165.0  
1000 s: (120.0...180.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.70...5.90  
Del.quantity cm<sup>3</sup>/ : 15.5...21.5  
1000 s: (13.5...23.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (9.00)

#### Remarks:

: NAVISTAR #1820267C91  
Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

#### Bow dimension:

Sliding-sleeve position = 37.0 mm  
Delivery-valve spring pre-tension =  
6.30...6.40 mm.  
Permissible alteration from 6.00...6.70  
mm



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,7 n  
Edition : 15.06.93  
Replaces : 02.92  
Test oil : ISO-4113

Combination no. : 0 402 776 808

Injection pump  
Pump designation : PES6P120A720RS7223  
EP type number : 0 412 726 843  
Governor  
Governor design. : RSV400...1050POA547  
Governor no. : 0 421 833 349

Customer spec. information  
Customer : JOHN DEERE

Engine : 6101 HZ010

1st version kW : 241.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 075

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 140...150

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X3.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65  
(3.50...3.70)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.70...12.80

Del.quantity cm<sup>3</sup>/ : 21.2...21.4  
100 s: (20.9...21.7)

Spread cm<sup>3</sup> : 0.5  
100 s: (0.9)

2nd speed rpm : 400.0  
Rack travel in mm : 6.0...6.2  
Del.quantity cm<sup>3</sup>/ : 2.2...2.8  
100 s: (2.0...3.0)  
Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1050  
Aneroid pressure h: 1200  
Del.quantity : 212.5...214.5  
1000 : (209.5...217.5)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 42...50

Testing:

1st rack travel in: 11.70  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1155...1165  
3rd rack travel in: 4.00  
Speed rpm : 1155...1185  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 22...30  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.6

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 6.00...6.20

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 12.70...12.80  
2nd speed rpm : 850  
Rack travel in m: 13.20...13.40

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 13.20...13.40

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.60...10.80  
2nd pressure hPa : 290  
Rack travel in m: 11.30...11.40  
3rd pressure hPa : 620  
Rack travel in m: 12.50...12.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 850

Del.quantity cm<sup>3</sup>/ : 222.0...228.0  
1000 s: (219.0...231.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 137.5...141.5  
1000 s: (135.5...143.5)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.70  
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 85.0...125.0  
1000 s: (80.0...130.0)  
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400  
Rack travel in mm : 6.00...6.20  
Del.quantity cm<sup>3</sup>/ : 22.5...28.5  
1000 s: (20.5...30.5)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

Adjustment without torque-control E47014  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Starting/full-load transition speed  
from holding magnet = 450 1/min.

Start-of-delivery mark at 10° cam  
rotation angle after start of delivery,  
cylinder 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE  
Edition : 15.06.93  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 776 809

Injection pump  
Pump designation : PES6P120A720RS7255  
EP type number : 0 412 726 881  
Governor  
Governor design. : RSV475...1000POA551  
Governor no. : 0 421 833 360

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6101 ATO10

1st version kW : 221.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 2 417 413 079

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 140...150

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x3.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65  
: (3.50...3.70)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.10...12.20

Del.quantity cm3/ : 21.5...21.7  
100 s: (21.2...22.0)

Spread cm3 : 0.5  
100 s: (0.9)

2nd speed rpm : 475.0  
Rack travel in mm : 5.3...5.5  
Del.quantity cm3/ : 2.2...2.8  
100 s: (2.0...3.0)  
Spread cm3 : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : 5.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1000  
Aneroid pressure h: 1200  
Del.quantity : 215.0...217.0  
1000 : (212.0...220.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 41...49

Testing:

1st rack travel in: 11.10  
Speed rpm : 1050...1060  
2nd rack travel in: 4.00  
Speed rpm : 1120...1130  
3rd rack travel in: 4.00  
Speed rpm : 1125...1155  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 21...29  
Setting point w/out bumper spring  
Speed rpm : 475  
Rack travel in mm : 4.9

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 475  
Rack travel in mm : 5.30...5.50

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 12.10...12.20

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.80...10.00  
2nd pressure hPa : 460  
Rack travel in m: 10.60...10.70  
3rd pressure hPa : 735  
Rack travel in m: 11.50...11.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 136.0...140.0  
1000 s: (134.0...142.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.10  
Speed rpm : 1050...1060

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 85.0...125.0  
1000 s: (80.0...130.0)  
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 475  
Rack travel in mm : 5.30...5.50  
Del.quantity cm<sup>3</sup>/ : 22.0...28.0  
1000 s: (20.0...30.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

Start-of-delivery blocking 8,75° after 3  
start of delivery of cylinder no. 1.

Starting/full-load transition speed  
from holding magnet = 450 1/min.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE  
Edition : 15.06.93  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 776 810

Injection pump  
Pump designation : PES6P120A72ORS7255  
EP type number : 0 412 726 881  
Governor  
Governor design. : RSV475...1050FOA547  
-1  
Governor no. : 0 421 833 380

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6101 AT012

1st version kW : 209.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 079

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 140...150

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X3.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65  
: (3.50...3.70)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.80...11.90

Del.quantity cm3/ : 20.9...21.1

100 s: (20.6...21.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 475.0

Rack travel in mm : 5.0...5.2

Del.quantity cm3/ : 1.7...2.3

100 s: (1.5...2.5)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 1500

Del.quantity : 209.0...211.0

1000 : (206.0...214.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 51...59

Testing:

1st rack travel in: 10.80  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1185...1195  
3rd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 33...41  
Setting point w/out bumper spring  
Speed rpm : 475  
Rack travel in mm : 4.6

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 475  
Rack travel in mm : 5.00...5.20

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 11.80...11.90  
2nd speed rpm : 700  
Rack travel in m: 12.10...12.30

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1500  
Rack travel mm : 11.80...11.90

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.90...10.10  
2nd pressure hPa : 530  
Rack travel in m: 10.60...10.70  
3rd pressure hPa : 850  
Rack travel in m: 11.50...11.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500  
Speed rpm : 700

Del.quantity cm<sup>3</sup>/ : 214.0...220.0  
1000 s: (211.0...223.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 144.0...148.0  
1000 s: (142.0...150.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.80  
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 85.0...125.0  
1000 s: (80.0...130.0)  
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 475  
Rack travel in mm : 5.00...5.20  
Del.quantity cm<sup>3</sup>/ : 17.5...23.5  
1000 s: (15.5...25.5)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

: JOHN DEERE # RE46181  
Start-of-delivery blocking 8,75° after  
start of delivery of cylinder no. 1.

Starting/full-load transition speed  
from holding magnet = 450 1/min.

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE  
Edition : 15.06.93  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 776 811  
Injection pump  
Pump designation : PES6P120A72ORS7255  
EP type number : 0 412 726 881  
Governor  
Governor design. : RSV400...1050POA547  
-2  
Governor no. : 0 421 833 409

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6101 AFD10

1st version kW : 242.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 079

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 140...150

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X3.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65  
: (3.50...3.70)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.50...12.60

Del.quantity cm3/ : 22.5...22.7  
100 s: (22.2...23.0)

Spread cm3 : 0.5  
100 s: (0.9)

2nd speed rpm : 400.0  
Rack travel in mm : 5.4...5.6  
Del.quantity cm3/ : 2.4...3.0  
100 s: (2.2...3.2)  
Spread cm3 : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3

Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : 5.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1050  
Aneroid pressure h: 1500  
Del.quantity : 225.5...227.5  
1000 : (222.5...230.5)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 41...49

Testing:

1st rack travel in: 11.50  
Speed rpm : 1095...1105  
2nd rack travel in: 4.00  
Speed rpm : 1150...1160  
3rd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 21...29  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.0

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 4.90...5.10

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 12.50...12.60  
2nd speed rpm : 750  
Rack travel in m: 12.90...13.10

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1500  
Rack travel mm : 12.90...13.10

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.60...9.80  
2nd pressure hPa : 620  
Rack travel in m: 10.50...10.60  
3rd pressure hPa : 1020  
Rack travel in m: 11.90...12.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500  
Speed rpm : 750

Del.quantity cm<sup>3</sup>/ : 230.5...236.5  
1000 s: (227.5...239.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 124.0...128.0  
1000 s: (122.0...130.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.50  
Speed rpm : 1095...1105

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 85.0...125.0  
1000 s: (80.0...130.0)  
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.40...5.60  
Del.quantity cm<sup>3</sup>/ : 24.5...30.5  
1000 s: (22.5...32.5)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

: JOHN DEERE # RE46179  
Start-of-delivery blocking 8,75° after  
start of delivery of cylinder no. 1.

Starting/full-load transition speed  
from holding magnet = 450 1/min.

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE  
Edition : 15.06.93  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 776 812  
  
Injection pump  
Pump designation : PES6P120A720RS7255  
EP type number : 0 412 726 881  
Governor  
Governor design. : RSV400...1050POA547  
-3  
Governor no. : 0 421 833 410

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6101 AF010

1st version kW : 225.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 2 417 413 079

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 140...150

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X3.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65  
: (3.50...3.70)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.70...11.80

Del.quantity cm3/ : 20.6...20.8

100 s: (20.3...21.1)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 400.0

Rack travel in mm : 5.5...5.7

Del.quantity cm3/ : 2.6...3.2

100 s: (2.4...3.4)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 1500

Del.quantity : 206.0...208.0

1000 : (203.0...211.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control Lever  
position degrees: 44...52

Testing:

1st rack travel in: 10.70  
Speed rpm : 1095...1105  
2nd rack travel in: 4.00  
Speed rpm : 1165...1175  
3rd rack travel in: 4.00  
Speed rpm : 1165...1195  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever  
position degrees: 23...31  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.1

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.50...5.70

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 11.70...11.80  
2nd speed rpm : 750  
Rack travel in m: 12.20...12.40

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1500  
Rack travel mm : 11.70...11.80

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.60...9.80  
2nd pressure hPa : 560  
Rack travel in m: 10.40...10.50  
3rd pressure hPa : 925  
Rack travel in m: 11.60...12.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500  
Speed rpm : 750

Del.quantity cm<sup>3</sup>/ : 213.0...219.0  
1000 s: (210.0...222.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 125.0...129.0  
1000 s: (123.0...131.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.70  
Speed rpm : 1095...1105

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 85.0...125.0  
1000 s: (80.0...130.0)  
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.50...5.70  
Del.quantity cm<sup>3</sup>/ : 26.5...32.5  
1000 s: (24.5...34.5)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

: JOHN DEERE # RE42225  
Start-of-delivery blocking 8,75° after  
start of delivery of cylinder no. 1.

Starting/full-load transition speed  
from holding magnet = 450 1/min.

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : NAV  
Edition : 15.06.93  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 776 813

Injection pump  
Pump designation : PES6P120A320LS7285  
EP type number : 0 412 726 892  
Governor  
Governor design. : RSV350...750P4A563  
Governor no. : 0 421 833 411

Customer-spec. information  
Customer : NAVISTAR

Engine : DTA-531

1st version kW : 231.0  
Rated speed : 1500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 076

Inlet press., bar : 2.80

Overflow  
quantity min. 1/h: 170...190

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 2.85...2.95  
: (2.80...3.00)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.40...12.50

Del.quantity cm3/ : 22.5...22.7

100 s: (22.2...23.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 4.9...5.1

Del.quantity cm3/ : 1.2...1.8

100 s: (1.0...2.0)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 225.0...227.0

1000 : (222.0...230.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever

Position degrees: 35...43

Testing:

1st rack travel in: 11.40  
Speed rpm : 765...775  
2nd rack travel in: 4.00  
Speed rpm : 800...810  
3rd rack travel in: 4.00  
Speed rpm : 805...815  
4th rack travel in: 850  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 14...22  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.0

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 350  
Rack travel in mm : 4.90...5.10

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.40  
Speed rpm : 765...775

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 165.0...205.0  
1000 s: (160.0...210.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 4.90...5.10  
Del.quantity cm3/ : 12.0...18.0  
1000 s: (10.0...20.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

: NAVISTAR #1820275C91

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

Delivery-valve spring pre-tension =  
6.30...6.40 mm.  
Permissible alteration from 6.00...6.70

mm

APPLICATION

Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : NAV  
Edition : 15.06.93  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 776 813B  
Injection pump  
Pump designation : PES6P120A32OLS7285  
EP type number : 0 412 726 892  
Governor  
Governor design. : RSV350...750F4A563  
Governor no. : 0 421 833 411

Cust. part no. : 1820275C91B

Customer-spec. information  
Customer : NAVISTAR

Engine : DTA-531

1st version kW : 221.0  
Rated speed : 1500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 076

Inlet press., bar : 2.80

Overflow  
quantity min. 1/h: 170...190

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 2.85...2.95  
: (2.80...3.00)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 11.30...11.40

Del.quantity cm<sup>3</sup>/ : 18.5...18.7

100 s: (18.2...19.0)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 4.9...5.1

Del.quantity cm<sup>3</sup>/ : 1.2...1.8

100 s: (1.0...2.0)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Del.quantity : 185.5...187.5

1000 : (182.5...190.5)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 41...49

### Testing:

1st rack travel in: 10.30  
Speed rpm : 910...920  
2nd rack travel in: 4.00  
Speed rpm : 940...950  
3rd rack travel in: 4.00  
Speed rpm : 945...955  
4th rack travel in: 1000  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control Lever  
position degrees: 14...22  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.0

### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 350  
Rack travel in mm : 4.90...5.10

## BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.30  
Speed rpm : 910...920

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 165.0...205.0  
1000 s: (160.0...210.0)  
Rack travel in mm : 19.00...21.00

## LOW IDLE

Speed rpm : 350  
Rack travel in mm : 4.90...5.10  
Del.quantity cm<sup>3</sup>/ : 12.0...18.0  
1000 s: (10.0...20.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

Delivery-valve spring pre-tension =

6.30...6.40 mm.  
Permissible alteration from 6.00...6.70  
mm

## APPLICATION

Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : NAV  
Edition : 15.06.93  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 776 813C  
Injection pump  
Pump designation : PES6P120A320LS7285  
EP type number : 0 412 726 892  
Governor  
Governor design. : RSV350...750P4A563  
Governor no. : 0 421 833 411

Cust. part no. : 1820275C91C

Customer-spec. information  
Customer : NAVISTAR

Engine : DTA-531

1st version kW : 201.0  
Rated speed : 1500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 076

Inlet press., bar : 2.80

Overflow  
quantity min. 1/h: 170...190

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 2.85...2.95  
: (2.80...3.00)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 10.70...10.80

Del.quantity cm3/ : 17.0...17.2

100 s: (16.7...17.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 4.9...5.1

Del.quantity cm3/ : 1.2...1.8

100 s: (1.0...2.0)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Del.quantity : 170.5...172.5

1000 : (167.5...175.5)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 41...49

### Testing:

1st rack travel in: 9.70  
Speed rpm : 910...920  
2nd rack travel in: 4.00  
Speed rpm : 940...950  
3rd rack travel in: 4.00  
Speed rpm : 945...955  
4th rack travel in: 1000  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 14...22  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.0

### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 350  
Rack travel in mm : 4.90...5.10

## BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.70  
Speed rpm : 910...920

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 165.0...205.0  
1000 s: (160.0...210.0)  
Rack travel in mm : 19.00...21.00

## LOW IDLE

Speed rpm : 350  
Rack travel in mm : 4.90...5.10  
Del. quantity cm<sup>3</sup>/ : 12.0...18.0  
1000 s: (10.0...20.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

Delivery-valve spring pre-tension =

6.30...6.40 mm.

Permissible alteration from 6.00...6.70  
mm

## APPLICATION

Generator



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : NAV  
Edition : 15.06.93  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 776 813D  
  
Injection pump  
Pump designation : PES6P120A320LS7285  
EP type number : 0 412 726 892  
Governor  
Governor design. : RSV35D...750P4A563  
Governor no. : 0 421 833 411

Cust. part no. : 1820275C91D

Customer-spec. information  
Customer : NAVISTAR

Engine : DTA-531

1st version kW : 208.0  
Rated speed : 1500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 076

Inlet press., bar : 2.80

Overflow  
quantity min. 1/h: 170...190

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 2.85...2.95  
: (2.80...3.00)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.30...11.40

Del.quantity cm3/ : 19.8...20.0

100 s: (19.5...20.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 4.9...5.1

Del.quantity cm3/ : 1.2...1.8  
100 s: (1.0...2.0)

Spread cm3 : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 198.0...200.0

1000 : (195.0...203.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 35...43

### Testing:

1st rack travel in: 10.30  
Speed rpm : 765...775  
2nd rack travel in: 4.00  
Speed rpm : 790...800  
3rd rack travel in: 4.00  
Speed rpm : 795...805  
4th rack travel in: 850  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 14...22  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.0

### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 350  
Rack travel in mm : 4.90...5.10

## BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.30  
Speed rpm : 765...775

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 165.0...205.0  
1000 s: (160.0...210.0)  
Rack travel in mm : 19.00...21.00

## LOW IDLE

Speed rpm : 350  
Rack travel in mm : 4.90...5.10  
Del.quantity cm<sup>3</sup>/ : 12.0...18.0  
1000 s: (10.0...20.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

Delivery-valve spring pre-tension =

B26

6.30...6.40 mm.

Permissible alteration from 6.00...6.70  
mm

## APPLICATION

Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : NAV  
 Edition : 15.06.93  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 776 813E  
 Injection pump  
 Pump designation : PES6P120A320LS7285  
 EP type number : 0 412 726 892  
 Governor  
 Governor design. : RSV350...750P4A563  
 Governor no. : 0 421 833 411

Cust. part no. : 1820275C91E

Customer-spec. information  
 Customer : NAVISTAR

Engine : DTA-531

1st version kW : 185.0  
 Rated speed : 1500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 076

Inlet press., bar : 2.80

Overflow  
 quantity min. 1/h: 170...190

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness : 6.00X2.00X600  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 2.85...2.95  
 : (2.80...3.00)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 10.70...10.80

Del.quantity cm3/ : 18.2...18.4

100 s: (17.9...18.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 4.9...5.1

Del.quantity cm3/ : 1.2...1.8

100 s: (1.0...2.0)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 182.5...184.5

1000 : (179.5...187.5)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 34...42

### Testing:

1st rack travel in: 9.70  
Speed rpm : 765...775  
2nd rack travel in: 4.00  
Speed rpm : 790...800  
3rd rack travel in: 4.00  
Speed rpm : 795...805  
4th rack travel in: 850  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 14...22  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.0

### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 350  
Rack travel in mm : 4.90...5.10

## BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.70  
Speed rpm : 765...775

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 165.0...205.0  
1000 s: (160.0...210.0)  
Rack travel in mm : 19.00...21.00

## LOW IDLE

Speed rpm : 350  
Rack travel in mm : 4.90...5.10  
Del.quantity cm<sup>3</sup>/ : 12.0...18.0  
1000 s: (10.0...20.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

Delivery-valve spring pre-tension =

6.30...6.40 mm.  
Permissible alteration from 6.00...6.70  
mm

## APPLICATION

Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : NAV  
Edition : 15.06.93  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 776 814  
  
Injection pump  
Pump designation : PES6P120A320LS7285  
EP type number : 0 412 726 892  
Governor  
Governor design. : RSV350...1000P4A564  
Governor no. : 0 421 833 413

Customer-spec. information  
Customer : NAVISTAR

Engine : DTA-531

1st version kW : 224.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 076

Inlet press., bar : 2.80

Overflow  
quantity min. 1/h: 170...190

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 2.85...2.95  
                  : (2.80...3.00)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.80...12.90

Del.quantity cm3/ : 20.0...20.2

100 s: (19.7...20.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.8...6.0

Del.quantity cm3/ : 2.9...3.5

100 s: (2.7...3.7)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1500

Del.quantity : 200.0...202.0

1000 : (197.0...205.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 51...59

Testing:

1st rack travel in: 11.80  
Speed rpm : 1050...1060  
2nd rack travel in: 4.00  
Speed rpm : 1095...1105  
3rd rack travel in: 4.00  
Speed rpm : 1100...1110  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.9

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 350  
Rack travel in mm : 5.80...6.00

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 1000  
Pressure hPa : 1500  
Rack travel mm : 12.80...12.90

Measurement

Speed 1/min : 1000

1st pressure hPa : -  
Rack travel in m: 7.40...7.80  
2nd pressure hPa : 430  
Rack travel in m: 8.90...9.00  
3rd pressure hPa : 930  
Rack travel in m: 11.30...11.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 85.5...89.5  
1000 s: (83.5...91.5)

BREAKAWAY

1st version

CO2

1mm rack travel less than

full load rack tr: 11.80  
Speed rpm : 1050...1060

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 165.0...205.0  
1000 s: (160.0...210.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.80...6.00  
Del.quantity cm3/ : 29.5...35.5  
1000 s: (27.5...37.5)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

Delivery-valve spring pre-tension =  
6.30...6.40 mm.

Permissible alteration from 6.00...6.70  
mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : NAV  
Edition : 15.06.93  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 776 814A  
Injection pump  
Pump designation : PES6P120A320LS7285  
EP type number : 0 412 726 892  
Governor  
Governor design. : RSV35D...1000P4A564  
Governor no. : 0 421 833 413

Cust. part no. : 1821048C91A

Customer-spec. information  
Customer : NAVISTAR

Engine : DTA-531

1st version kw : 205.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 076

Inlet press., bar : 2.80

Overflow  
quantity min. 1/h: 170...190

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 2.85...2.95  
: (2.80...3.00)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.90...12.00

Del.quantity cm3/ : 17.7...17.9

100 s: (17.4...18.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.8...6.0

Del.quantity cm3/ : 2.9...3.5

100 s: (2.7...3.7)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1500

Del.quantity : 177.0...179.0

1000 : (174.0...182.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 51...59

### Testing:

1st rack travel in: 10.90  
Speed rpm : 1055...1065  
2nd rack travel in: 4.00  
Speed rpm : 1095...1105  
3rd rack travel in: 4.00  
Speed rpm : 1100...1110  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.9

### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 350  
Rack travel in mm : 5.80...6.00

Aneroid/Altitude  
Compensator Test

## 1st version

Setting  
Speed rpm : 1000  
Pressure hPa : 1500  
Rack travel mm : 12.80...12.90

### Measurement

Speed 1/min : 1000

1st pressure hPa : -  
Rack travel in m: 7.40...7.80  
2nd pressure hPa : 400  
Rack travel in m: 8.70...8.90  
3rd pressure hPa : 800  
Rack travel in m: 10.60...11.00

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 85.5...89.5  
1000 s: (83.5...91.5)

## BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.90  
Speed rpm : 1055...1065

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 165.0...205.0  
1000 s: (160.0...210.0)  
Rack travel in mm : 19.00...21.00

## LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.80...6.00  
Del.quantity cm<sup>3</sup>/ : 29.5...35.5  
1000 s: (27.5...37.5)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

Delivery-valve spring pre-tension =  
6.30...6.40 mm.  
Permissible alteration from 6.00...6.70  
mm



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : NAV  
Edition : 15.06.93  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 776 8148  
Injection pump  
Pump designation : PES6P120A320LS7285  
EP type number : 0 412 726 892  
Governor  
Governor design. : RSV350...1000P4A564  
Governor no. : 0 421 833 413

Cust. part no. : 1821048C91B

Customer-spec. information  
Customer : NAVISTAR

Engine : DTA-531

1st version kW : 186.5  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 076

Inlet press., bar : 2.80

Overflow  
quantity min. 1/h: 170...190

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 2.85...2.95  
: (2.80...3.00)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.10...11.20

Del.quantity cm<sup>3</sup>/ : 15.8...16.0

100 s: (15.5...16.3)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.8...6.0

Del.quantity cm<sup>3</sup>/ : 2.9...3.5

100 s: (2.7...3.7)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1500

Del.quantity : 158.0...160.0

1000 : (155.0...163.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 51...59

### Testing:

1st rack travel in: 10.10  
Speed rpm : 1055...1065  
2nd rack travel in: 4.00  
Speed rpm : 1095...1105  
3rd rack travel in: 4.00  
Speed rpm : 1100...1110  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.9

### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 350  
Rack travel in mm : 5.80...6.00

Aneroid/Altitude  
Compensator Test

## 1st version

Setting  
Speed rpm : 1000  
Pressure hPa : 1500  
Rack travel mm : 12.80...12.90

## Measurement

Speed 1/min : 1000

1st pressure hPa : -  
Rack travel in m: 7.40...7.80  
2nd pressure hPa : 360  
Rack travel in m: 8.50...8.60  
3rd pressure hPa : 680  
Rack travel in m: 10.00...10.40

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 85.5...89.5  
1000 s: (83.5...91.5)

## BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.10  
Speed rpm : 1055...1065

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 165.0...205.0  
1000 s: (160.0...210.0)  
Rack travel in mm : 19.00...21.00

## LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.80...6.00  
Del.quantity cm<sup>3</sup>/ : 29.5...35.5  
1000 s: (27.5...37.5)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

Delivery-valve spring pre-tension =  
6.30...6.40 mm.  
Permissible alteration from 6.00...6.70  
mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE  
Edition : 15.06.93  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 776 815

Injection pump  
Pump designation : PES6P120A720RS7255  
EP type number : 0 412 726 881  
Governor  
Governor design. : RSV400...900P7A569  
Governor no. : 0 421 833 418

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6101 AF010

1st version kW : 285.0  
Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 079

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 140...150

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X3.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65  
: (3.50...3.70)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 14.90...15.00

Del. quantity cm<sup>3</sup>/ : 30.9...31.1

100 s: (30.6...31.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 400.0

Rack travel in mm : 5.4...5.6

Del. quantity cm<sup>3</sup>/ : 2.6...3.2

100 s: (2.4...3.4)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Del. quantity : 309.5...311.5

1000 : (306.5...314.5)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: 56...64

Testing:

1st rack travel in: 14.10  
Speed rpm : 895...905  
2nd rack travel in: 4.00  
Speed rpm : 950...960  
3rd rack travel in: 4.00  
Speed rpm : 965...995  
4th rack travel in: 1050  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 29...37  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.0

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.40...5.60

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 14.10  
Speed rpm : 895...905

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 85.0...125.0  
1000 s: (80.0...130.0)  
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.40...5.60  
Del.quantity cm<sup>3</sup>/ : 26.0...32.0  
1000 s: (24.0...34.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

: JOHN DEERE # RE42226

Start-of-delivery blocking 8,75° after  
start of delivery of cylinder no. 1.

Starting/full-load transition speed  
from holding magnet = 450 1/min.

APPLICATION

Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE  
Edition : 15.06.93  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 776 816

Injection pump  
Pump designation : PES6P120A72ORS7255  
EP type number : 0 412 726 881  
Governor  
Governor design. : RSV400...1050POA547  
-4  
Governor no. : 0 421 833 419

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6101 HFO10

1st version kW : 280.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 079

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 140...150

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test Lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X3.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65  
(3.50...3.70)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 13.70...13.80

Del.quantity cm3/ : 26.1...26.3

100 s: (25.8...26.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 400.0

Rack travel in mm : 5.6...5.8

Del.quantity cm3/ : 2.9...3.5

100 s: (2.7...3.7)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 1500

Del.quantity : 261.5...263.5

1000 : (258.5...266.5)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 40...48

Testing:

1st rack travel in: 12.70  
Speed rpm : 1095...1105  
2nd rack travel in: 4.00  
Speed rpm : 1155...1165  
3rd rack travel in: 4.00  
Speed rpm : 1155...1185  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 17...25  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.2

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.60...5.80

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 13.70...13.80  
2nd speed rpm : 850  
Rack travel in m: 14.00...14.20

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1500  
Rack travel mm : 14.00...14.20

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.70...9.90  
2nd pressure hPa : 600  
Rack travel in m: 10.90...11.00  
3rd pressure hPa : 1060  
Rack travel in m: 12.70...13.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure in: 1500  
Speed rpm : 850

Del.quantity cm<sup>3</sup>/ : 276.0...282.0  
1000 s: (273.0...285.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 132.5...136.5  
1000 s: (130.5...138.5)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.70  
Speed rpm : 1095...1105

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 85.0...125.0  
1000 s: (80.0...130.0)  
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.60...5.80  
Del.quantity cm<sup>3</sup>/ : 29.0...35.0  
1000 s: (27.0...37.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

: JOHN DEERE # RE46178  
Start-of-delivery blocking 8,75° after  
start of delivery of cylinder no. 1.

Starting/full-load transition speed  
from holding magnet = 450 1/min.

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB6,11  
Edition : 21.05.92  
Replaces : 03.92  
Test oil : ISO-4113

Combination no. : 0 403 246 031

Injection pump  
Pump designation : PES6MW100/720RS1515  
EP type number : 0 413 206 013  
Governor  
Governor design. : RQV300...1300MW125-1  
Governor no. : 0 420 083 258

Customer-spec. information  
Customer : MB-NFZ

Engine : OM366LA

1st version kW : 127.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 631 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 21.00...0.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.50...11.60

Del.quantity cm<sup>3</sup>/ : 9.6...9.8

100 s: (9.4...10.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 4.2...4.4

Del.quantity cm<sup>3</sup>/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

travel mm : 8.00...8.40

2nd speed rpm : 960

travel mm : 5.40...5.60

3rd speed rpm : 600

travel mm : 3.20...3.80

4th speed rpm : 300

travel mm : 0.90...1.30

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1380

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1000

Del.quantity : 96.0...98.0

1000 : (94.0...100.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 108...116

Testing:  
1st rack travel in: 10.50  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1430...1460  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 68...76  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.3

Testing:  
Speed rpm : 200  
Minimum rack travel: 5.00  
Speed rpm : 300  
Rack travel in mm : 4.20...4.40

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 8.90...9.10

Measurement  
Speed 1/min : 500

1st pressure hPa : 300  
Rack travel in m: 9.40...9.60  
2nd pressure hPa : 500  
Rack travel in m: 11.10...11.30  
3rd pressure hPa : 1000  
Rack travel in m: 11.50...11.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 89.0...92.0  
1000 s: (86.5...94.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 35.0...37.0  
1000 s: (33.0...39.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.50  
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 115.0...125.0  
1000 s: (112.0...128.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.20...4.40  
Del.quantity cm<sup>3</sup>/ : 10.0...14.0  
1000 s: (7.5...16.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : NAV  
Edition : 01.03.93  
Replaces : 08.92  
Test oil : ISO-4113

Combination no. : 0 403 446 239AA

Injection pump  
Pump designation : PES6MW100/320RS1189  
EP type number : 0 413 406 177  
Governor  
Governor design. : RQV350...1200MW46-21  
Governor no. : 0 420 083 201

Cust. part no. : 1819901C91

Customer-spec. information  
Customer : NAVISTAR

Engine : DTA-466

1st version kW : 186.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

C13

Test pressure, bar: 30...32

Prestroke mm : 3.25...3.35  
: (3.20...3.40)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Phasing  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 12.60...12.70

Del. quantity cm<sup>3</sup>/ : 13.2...13.6

100 s: (12.9...13.9)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.2...5.4

Del. quantity cm<sup>3</sup>/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.80...10.20

2nd speed rpm : 1250

travel mm : 7.90...8.10

3rd speed rpm : 550

travel mm : 3.10...3.70

4th speed rpm : 350

travel mm : 1.30...1.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 1200

Del. quantity : 132.5...136.5

1000 : (129.5...139.5)

Spread cm<sup>3</sup> : 6.00

1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 104...112

Testing:  
1st rack travel in: 11.60  
Speed rpm : 1285...1305  
2nd rack travel in: 4.00  
Speed rpm : 1415...1425  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 66...74  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.3

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 350  
Rack travel in mm : 5.20...5.40

CONSTANT REGULATION  
Speed rpm : 300...450

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 9.20...9.30

Measurement  
Speed 1/min : 500

1st pressure hPa : 250  
Rack travel in m: 10.00...10.10  
2nd pressure hPa : 560  
Rack travel in m: 11.40...11.80  
3rd pressure hPa : 1200  
Rack travel in m: 12.60...12.70

START CUT-OUT

Speed 1/min : 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 800

Del.quantity cm<sup>3</sup>/ : 135.5...137.5  
1000 s: (132.5...140.5)  
Spread cm<sup>3</sup> : 4.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 71.5...73.5  
1000 s: (69.5...75.5)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.60  
Speed rpm : 1285...1305

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 150.0...190.0  
1000 s: (147.0...193.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.20...5.40  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

In unlatched condition, do not  
operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before  
shutoff.

Only perform pump setting with original  
overflow valve without IH hose and  
restrictor 1.2 mm diameter.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : NAV  
Edition : 01.03.93  
Replaces : 08.92  
Test oil : ISO-4113

Combination no. : 0 403 446 254BA

Injection pump  
Pump designation : PES6MW100/320RS1189  
EP type number : 0 413 406 177  
Governor  
Governor design. : RGV350...1200MW46-29  
Governor no. : 0 420 083 217

Cust. part no. : 1819902C91

Customer-spec. information  
Customer : NAVISTAR

Engine : DTA-466

1st version kW : 186.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

C15

Test pressure, bar: 30...32

Prestroke mm : 3.25...3.35  
: (3.20...3.40)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Phasing :  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 12.60...12.70

Del.quantity cm3/ : 13.2...13.6

100 s: (12.9...13.9)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.2...5.4

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.80...10.20

2nd speed rpm : 1250

travel mm : 7.90...8.10

3rd speed rpm : 550

travel mm : 3.10...3.70

4th speed rpm : 350

travel mm : 1.30...1.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 1200

Del.quantity : 132.5...136.5

1000 : (129.5...139.5)

Spread cm3 : 6.00

1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 104...112

Testing:  
1st rack travel in: 11.60  
Speed rpm : 1285...1305  
2nd rack travel in: 4.00  
Speed rpm : 1415...1425  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 66...74  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.3

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 350  
Rack travel in mm : 5.20...5.40

CONSTANT REGULATION  
Speed rpm : 300...450

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 9.20...9.30

Measurement  
Speed 1/min : 500

1st pressure hPa : 250  
Rack travel in m: 10.00...10.10  
2nd pressure hPa : 560  
Rack travel in m: 11.40...11.80  
3rd pressure hPa : 1200  
Rack travel in m: 12.60...12.70

START CUT-OUT

Speed 1/min : 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 800

Del.quantity cm<sup>3</sup>/ : 135.5...137.5  
1000 s: (132.5...140.5)  
Spread cm<sup>3</sup> : 4.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 71.5...73.5  
1000 s: (69.5...775.0)  
1000 s: (5.00)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.60  
Speed rpm : 1285...1305

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 150.0...190.0  
1000 s: (147.0...193.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.20...5.40  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

In unlatched condition, do not  
operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before  
shutoff.

Only perform pump setting with original  
overflow valve without IH hose and  
restrictor 1.2 mm diameter.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet :  
 Edition : 01.03.93  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 403 446 315  
 Injection pump  
 Pump designation : PES6MW100/320LS1230  
 EP type number : 0 413 406 222  
 Governor  
 Governor design. : RQ275/950MW130  
 Governor no. : 0 420 082 071

Customer-spec. information  
 Customer : RBOS-HU

Engine : D10UTS150

1st version kW : 150.0  
 Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 047  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 101  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,6  
 Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 30...32

Prestroke mm : 3.80...3.90  
 : (3.75...3.95)  
 Rack travel in mm : 13.00...0.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 950  
 Rack travel in mm : 13.10...13.20  
 Del.quantity cm<sup>3</sup>/ : 13.0...13.2  
 100 s: (12.7...13.5)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

2nd speed rpm : 275.0  
 Rack travel in mm : 7.8...8.0  
 Del.quantity cm<sup>3</sup>/ : 1.5...1.9  
 100 s: (1.2...2.1)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1050  
 travel mm : 7.70...8.30  
 2nd speed rpm : 1010  
 travel mm : 6.30...6.50  
 3rd speed rpm : 700  
 travel mm : 5.80...6.20  
 4th speed rpm : 385  
 travel mm : 4.00...4.40  
 5th speed rpm : 275  
 travel mm : 1.80...2.00

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: 108  
 Speed rpm : 700  
 Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 950  
 Aneroid pressure h: 800  
 Del.quantity : 130.0...132.0  
 1000 : (127.0...135.0)

Spread cm<sup>3</sup> : 4.00  
1000 : (7.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 90...98

Setting point:  
Speed rpm : 700  
Rack travel in mm : 20.0

Testing:  
1st rack travel in: 12.10  
Speed rpm : 1005...1020  
2nd rack travel in: 4.00  
Speed rpm : 1070...1100  
4th rack travel in: 1200  
Speed rpm : 0.10...1.00

LOW IDLE 1  
Control lever  
position degrees: 70...78  
Setting point w/out bumper spring  
Speed rpm : 275  
Rack travel in mm : 7.9

Testing:  
Speed rpm : 150  
Minimum rack travel: 9.50  
Speed rpm : 275  
Rack travel in mm : 7.80...8.00

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 310  
Rack travel mm : 12.80...12.90

Measurement  
Speed 1/min : 500

1st pressure hPa : 800  
Rack travel in m: 13.10...13.20  
2nd pressure hPa : -  
Rack travel in m: 11.00...11.10  
3rd pressure hPa : 310  
Rack travel in m: 12.80...12.90

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 95.0...97.0  
1000 s: (93.0...99.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.10  
Speed rpm : 1005...1020

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 160.0...180.0  
1000 s: (157.0...183.0)

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 7.80...8.00  
Del.quantity cm<sup>3</sup>/ : 15.0...19.0  
1000 s: (12.5...21.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 7,3 D 1  
Edition : 01.03.93  
Replaces : 10.91  
Test oil : ISO-4113

Combination no. : 0 403 456 116

Injection pump  
Pump designation : PES6MW100/321RS1215  
EP type number : 0 413 406 205  
Governor  
Governor design. : RQ250/1200MW84-8  
Governor no. : 0 420 082 063

Customer-spec. information  
Customer : MAN

Engine : D 0826 LF 04

1st version kW : 199.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.60...13.70

Del.quantity cm<sup>3</sup>/ : 16.7...16.9

100 s: (16.4...17.2)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 5.5...5.7

Del.quantity cm<sup>3</sup>/ : 2.1...2.5

100 s: (1.8...2.7)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1320  
travel mm : 9.30...9.70

2nd speed rpm : 1255  
travel mm : 6.50...6.70

3rd speed rpm : 360  
travel mm : 3.90...4.50

4th speed rpm : 250  
travel mm : 1.60...2.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: 108

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1200

Del.quantity : 167.5...169.5

1000 : (164.5...172.5)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 91...99

### Setting point:

Speed rpm : 600  
Rack travel in mm : 20.0

### Testing:

1st rack travel in: 12.60  
Speed rpm : 1245...1260  
2nd rack travel in: 4.00  
Speed rpm : 1340...1370  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 67...75  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.6

### Testing:

Speed rpm : 150  
Minimum rack travel: 7.50  
Speed rpm : 250  
Rack travel in mm : 5.50...5.70

Aneroid/Altitude  
Compensator Test

## 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 200  
Rack travel mm : 10.00...10.10

### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.50...9.60  
2nd pressure hPa : 700  
Rack travel in m: 12.30...12.60  
3rd pressure hPa : 1200  
Rack travel in m: 13.60...13.70

## FUEL DELIVERY CHARACTERISTICS

## 1st version

Aneroid pressure h: 1200  
Speed rpm : 600  
Del.quantity cm3/ : 174.0...178.0  
1000 s: (171.0...181.0)

Spread cm3 : 6.00  
1000 s: (9.0)  
Aneroid pressure h: 1200  
Speed rpm : 800  
Del.quantity cm3/ : 167.0...171.0  
1000 s: (164.0...174.0)  
Aneroid pressure h: 1200  
Speed rpm : 1200  
Del.quantity cm3/ : 163.0...167.0  
1000 s: (160.0...170.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 77.0...79.0  
1000 s: (75.0...81.0)

## BREAKAWAY

## 1st version

1mm rack travel less than  
full load rack tr: 12.60  
Speed rpm : 1245...1260

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 70.0...90.0  
1000 s: (67.0...93.0)

## LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.50...5.70  
Del.quantity cm3/ : 21.0...25.0  
1000 s: (18.5...27.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

### Remarks:

: MAN #3-7137  
Start-of-delivery mark is at start of  
delivery of cylinder 1



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 7,3 D 2  
Edition : 01.03.93  
Replaces : 10.91  
Test oil : ISO-4113

Combination no. : 0 403 456 117

Injection pump  
Pump designation : PES6MW100/321RS1215  
EP type number : 0 413 406 205  
Governor  
Governor design. : RQV250...1200MW83-2  
Governor no. : 0 420 083 216

Customer-spec. information  
Customer : MAN

Engine : D 0826 LF 04

1st version kW : 199.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
: (3.45...3.65)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.60...13.70

Del.quantity cm3/ : 16.7...16.9

100 s: (16.4...17.2)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 5.5...5.7

Del.quantity cm3/ : 2.1...2.5

100 s: (1.8...2.7)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1250  
travel mm : 10.60...11.00

2nd speed rpm : 800  
travel mm : 5.90...6.10

3rd speed rpm : 450  
travel mm : 3.20...3.80

4th speed rpm : 250  
travel mm : 1.20...1.60

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1000

Aneroid pressure h: 1200

Del.quantity : 167.5...169.5

1000 : (164.5...172.5)

Spread cm3 : 4.00

1000 : (7.50)

## RATED SPEED

### 1st version

Control lever

position degrees: 124...132

Testing:  
1st rack travel in: 12.60  
Speed rpm : 1250...1260  
2nd rack travel in: 4.00  
Speed rpm : 1340...1370  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 67...75  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.6

Testing:  
Speed rpm : 150  
Minimum rack travel: 7.50  
Speed rpm : 250  
Rack travel in mm : 5.50...5.70

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 200  
Rack travel mm : 10.00...10.10

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.50...9.60  
2nd pressure hPa : 700  
Rack travel in m: 12.30...12.60  
3rd pressure hPa : 1200  
Rack travel in m: 13.60...13.70

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 174.0...178.0  
1000 s: (171.0...181.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (9.0)  
Aneroid pressure h: 1200  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 167.0...171.0  
1000 s: (164.0...174.0)  
Aneroid pressure h: 1200  
Speed rpm : 1200  
Del.quantity cm<sup>3</sup>/ : 163.0...167.0  
1000 s: (160.0...170.0)  
Aneroid pressure h: -

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 77.0...79.0  
1000 s: (75.0...81.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.60  
Speed rpm : 1250...1260

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 70.0...90.0  
1000 s: (67.0...93.0)

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.50...5.70  
Del.quantity cm<sup>3</sup>/ : 21.0...25.0  
1000 s: (18.5...27.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:  
: MAN #3-7138

Start-of-delivery mark is at start of  
delivery of cylinder 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM  
Edition : 26.02.93  
Replaces : 06.92  
Test oil : ISO-4113

Combination no. : 0 403 466 127

Injection pump  
Pump designation : PES6MW100/120RS1137-  
2

EP type number : 0 413 406 180

Governor

Governor design. : RSV550...1100MW2A335  
-1

Governer no. : 0 420 085 185

Customer-spec. information  
Customer : CUMMINS

Engine : 6 CTA-8.3

1st version kW : 194.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test Lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 14.40...14.50

Del.quantity cm3/ : 15.2...15.4

100 s: (14.9...15.7)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 550.0

Rack travel in mm : 6.8...7.2

Del.quantity cm3/ : 2.2...2.6

100 s: (2.0...2.9)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del.quantity : 152.5...154.5

1000 : (149.5...157.5)

Spread cm3 : 4.00

1000 : (7.50)

## RATED SPEED

1st version

Control lever

position degrees: 93...101

Setting point:

Speed rpm : 800  
Rack travel in mm : 0.6

Testing:

1st rack travel in: 13.40  
Speed rpm : 1165...1175  
2nd rack travel in: 4.00  
Speed rpm : 1240...1250  
3rd rack travel in: 4.00  
Speed rpm : 1240...1270  
4th rack travel in: 1350  
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever

position degrees: 68...76  
Setting point w/out bumper spring  
Speed rpm : 550  
Rack travel in mm : 6.5

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 550  
Rack travel in mm : 6.40...6.60

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100  
Rack travel in m: 14.40...14.50  
2nd speed rpm : 750  
Rack travel in m: 15.00...15.20  
3rd speed rpm : 1000  
Rack travel in m: 15.00...15.20

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 15.00...15.20

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.50...11.70  
2nd pressure hPa : 400  
Rack travel in m: 12.30...12.40  
3rd pressure hPa : 630  
Rack travel in m: 13.80...14.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900  
Speed rpm : 750  
Del.quantity cm3/ : 156.0...160.0  
1000 s: (153.0...163.0)  
Spread cm3 : 6.00  
1000 s: (9.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 100.0...102.0  
1000 s: (98.0...104.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.40  
Speed rpm : 1165...1175

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...150.0  
1000 s: (127.0...153.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 550  
Rack travel in mm : 6.80...7.20  
Del.quantity cm3/ : 22.5...26.5  
1000 s: (20.0...29.0)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

: CUM #3911657

Start-of-delivery mark 9° cam angle  
after start of delivery cyl. 1.

Adjust stop lever to 0.5...1.0 mm  
before stop.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM  
Edition : 26.02.93  
Replaces : 06.92  
Test oil : ISO-4113

Combination no. : 0 403 466 128

Injection pump  
Pump designation : PES6MW100/120RS1137-  
2

EP type number : 0 413 406 180

Governor

Governor design. : RSV550...1100MW2A335  
-2

Governor no. : 0 420 085 196

Customer-spec. information

Customer : CUMMINS

Engine : 6 CTA-8.3

1st version kW : 176.0

Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm. : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.30...13.40

Del.quantity cm3/ : 14.0...14.2

100 s: (13.7...14.5)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 550.0

Rack travel in mm : 7.0...7.4

Del.quantity cm3/ : 2.8...3.2

100 s: (2.6...3.5)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1000

Del.quantity : 140.0...142.0

1000 : (137.0...145.0)

Spread cm3 : 4.00

1000 : (7.50)

## RATED SPEED

1st version

Control lever

position degrees: 90...98

Setting point:

Speed rpm : 800  
Rack travel in mm : 0.6

Testing:

1st rack travel in: 12.30  
Speed rpm : 1165...1175  
2nd rack travel in: 4.00  
Speed rpm : 1240...1250  
3rd rack travel in: 4.00  
Speed rpm : 1240...1270  
4th rack travel in: 1350  
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever  
position degrees: 68...76  
Setting point w/out bumper spring  
Speed rpm : 550  
Rack travel in mm : 6.7

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 550  
Rack travel in mm : 6.60...6.80

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 13.30...13.40  
2nd speed rpm : 750  
Rack travel in m: 14.00...14.10  
3rd speed rpm : 1000  
Rack travel in m: 14.00...14.10

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 14.00...14.10

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.10...10.20  
2nd pressure hPa : 450  
Rack travel in m: 11.00...11.10  
3rd pressure hPa : 675  
Rack travel in m: 12.80...13.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000  
Speed rpm : 800  
Del.quantity cm3/ : 152.0...156.0  
1000 s: (149.0...159.0)  
Spread cm3 : 6.00  
1000 s: (9.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 80.0...82.0  
1000 s: (78.0...84.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 12.30  
Speed rpm : 1165...1175

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...150.0  
1000 s: (127.0...153.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 550  
Rack travel in mm : 7.00...7.40  
Del.quantity cm3/ : 28.5...32.5  
1000 s: (26.0...35.0)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

: CUM #3921691

Start-of-delivery mark at 10° cam  
rotation angle after start of delivery,  
cylinder 1

Adjust stop lever to 0.5...1.0 mm  
before stop.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM  
Edition : 26.02.93  
Replaces : 02.93  
Test oil : ISO-4113  
  
Combination no. : 0 403 466 130  
  
Injection pump  
Pump designation : PES6MW100/120RS1137-  
2  
EP type number : 0 413 406 180  
Governor  
Governor design. : RSV550...1100MW2A335  
-4  
Governor no. : 0 420 085 206

Customer-spec. information  
Customer : CUMMINS

Engine : 6 CTA

1st version kW : 179.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
: (3.45...3.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
Phasing :  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 14.40...14.50

Del.quantity cm3/ : 15.2...15.4

100 s: (14.9...15.7)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 550.0  
Rack travel in mm : 6.8...7.1  
Del.quantity cm3/ : 2.2...2.6  
100 s: (2.0...2.9)  
Spread cm3 : 0.3  
100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Aneroid pressure h: 900  
Del.quantity : 152.5...154.5  
1000 : (149.5...157.5)  
Spread cm3 : 4.00  
1000 : (7.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 93...101

Setting point:

Speed rpm : 800  
Rack travel in mm : 0.6

Testing:

1st rack travel in: 13.40  
Speed rpm : 1165...1175  
2nd rack travel in: 4.00  
Speed rpm : 1240...1250  
3rd rack travel in: 4.00  
Speed rpm : 1240...1270  
4th rack travel in: 1350  
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever  
position degrees: 68...76  
Setting point w/out bumper spring  
Speed rpm : 550  
Rack travel in mm : 6.5

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 550  
Rack travel in mm : 6.40...6.60

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 14.40...14.50

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.50...11.70  
2nd pressure hPa : 400  
Rack travel in m: 12.30...12.40  
3rd pressure hPa : 630  
Rack travel in m: 13.80...14.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 100.0...102.0  
1000 s: (98.0...104.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.40  
Speed rpm : 1165...1175

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...150.0  
1000 s: (127.0...153.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 550  
Rack travel in mm : 6.80...7.10  
Del.quantity cm<sup>3</sup>/ : 22.5...26.5  
1000 s: (20.0...29.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

: CUM #3925266

Start-of-delivery mark 9° cam angle  
after start of delivery cyl. 1.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 05.03.93  
Replaces : 03.92  
Test oil : ISO-4113

Combination no. : 0 403 476 113

Injection pump  
Pump designation : PES6MW100/72ORS1131-  
1  
EP type number : 0 413 406 165  
Governor  
Governor design. : RSV350...1200MWOA342  
-10  
Governor no. : 0 420 085 187

Customer-spec. information  
Customer : MB-NFZ

Engine : OM 366 LA

1st version kW : 132.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test Lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70  
: (3.55...3.75)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 11.00...11.20

Del.quantity cm<sup>3</sup>/ : 7.6...7.8

100 s: (7.4...8.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.5...6.0

Del.quantity cm<sup>3</sup>/ : 0.9...1.3

100 s: (0.6...1.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 3.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 700

Del.quantity : 76.0...78.0

1000 : (74.0...80.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 96...104

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 10.10  
Speed rpm : 1240...1245 \*  
2nd rack travel in: 4.00  
Speed rpm : 1280...1293  
3rd rack travel in: 4.00  
Speed rpm : 1300...1330  
4th rack travel in: 1450  
Speed rpm : 0.30...1.70  
5th rack travel in: 1240...1255  
Speed rpm : 10.10

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.7

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 350  
Rack travel in mm : 5.50...6.00  
Rack travel in mm : 2.00  
Speed rpm : 400...460

TORQUE CONTROL

Dimension a mm : 1.10  
Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 11.00...11.20  
2nd speed rpm : 500  
Rack travel in m: 12.20...12.40  
3rd speed rpm : 600  
Rack travel in m: 12.00...12.20  
4th speed rpm : 1000  
Rack travel in m: 11.40...11.60

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.10...10.30

Measurement

Speed 1/min : 500

1st pressure hPa : 200  
Rack travel in m: 11.00...11.20  
2nd pressure hPa : 300  
Rack travel in m: 11.60...11.80  
3rd pressure hPa : 700  
Rack travel in m: 12.10...12.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700  
Speed rpm : 500  
Del.quantity cm3/ : 70.0...73.0  
1000 s: (67.5...75.5)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 36.0...38.0  
1000 s: (34.0...40.0)

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 100.0...110.0  
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.50...6.00  
Del.quantity cm3/ : 9.0...13.0  
1000 s: (6.5...15.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

\* Read off speed set under 1.  
Add 40...48 min<sup>-1</sup> to this speed. The  
control-rod travel under 2. must be  
attained with the calculated speed  
profile.

Test hydr. locking device for starting  
with 800...1200 hPa air pressure.

Set pneumatic shutoff device to  
control-rod stop = 0.5...1.5 mm  
control-rod travel at 4.5 bar  
atmospheric pressure.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 26.02.93  
Replaces : 08.92  
Test oil : ISO-4113

Combination no. : 0 403 476 114

Injection pump  
Pump designation : PES6MW100/720RS1131-1

EP type number : 0 413 406 165  
Governor  
Governor design. : RSV550...1100MWOA325-4

Governor no. : 0 420 085 188

Customer-spec. information  
Customer : MB-NFZ

Engine : OM366LA

1st version kW : 170.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70  
: (3.55...3.75)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1080

Rack travel in mm : 13.00...13.10

Del.quantity cm3/ : 10.3...10.5

100 s: (10.1...10.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 550.0

Rack travel in mm : 5.8...6.3

Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1080

Del.quantity : 103.0...105.0

1000 : (101.0...107.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

### 1st version

Control lever

position degrees: 82...90

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

## Testing:

1st rack travel in: 12.0

Speed rpm : 1120...1125 \*

2nd rack travel in: 4.00  
Speed rpm : 1145...1158  
4th rack travel in: 1550  
Speed rpm : 0.30...1.70

LOW IDLE 1  
Control lever  
position degrees: 70...78  
Setting point w/out bumper spring  
Speed rpm : 550  
Rack travel in mm : 6.0

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 550  
Rack travel in mm : 5.80...6.30

SET IDLE AUXILIARY SPRING  
Rack travel in mm : 2.00

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1080  
Rack travel in m: 13.00...13.10  
2nd speed rpm : 750  
Rack travel in m: 13.90...14.00  
3rd speed rpm : 925  
Rack travel in m: 13.40...13.60

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 750  
Del. quantity cm<sup>3</sup>/ : 108.0...111.0  
1000 s: (105.5...113.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 100.0...110.0  
1000 s: (97.0...113.0)

#### LOW IDLE

Speed rpm : 550  
Rack travel in mm : 5.80...6.30  
Del. quantity cm<sup>3</sup>/ : 10.0...14.0  
1000 s: (7.5...16.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

Test hydr. locking device for starting

004

with 500...1000 hPa air pressure.

\* Read off speed set under 1.  
Add 25...33 min<sup>-1</sup> to this speed. The  
control-rod travel under 2. must be  
attained with the calculated speed  
profile.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN  
Edition : 05.03.93  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 403 486 105  
  
Injection pump  
Pump designation : PES6MW100/321RS1231  
EP type number : 0 413 406 225  
Governor  
Governor design. : RSV300...1100MWOA343  
-1  
Governor no. : 0 420 085 209

Customer-spec. information  
Customer : MAN

Engine : D0826LE 522

1st version kW : 154.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
: (3.45...3.65)

D05

Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.00...12.10

Del.quantity cm3/ : 14.2...14.4

100 s: (13.9...14.7)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 5.0...5.2

Del.quantity cm3/ : 0.9...1.3

100 s: (0.6...1.5)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1000

Del.quantity : 142.0...144.0

1000 : (139.0...147.0)

Spread cm3 : 4.00

1000 : (7.50)

## RATED SPEED

1st version

Control lever

position degrees: 90...98

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 11.00  
Speed rpm : 1150...1160  
2nd rack travel in: 4.00  
Speed rpm : 1230...1260  
4th rack travel in: 1350  
Speed rpm : 0.30...1.70

#### LOW IDLE 1

Control lever  
position degrees: 64...72  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.1

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 300  
Rack travel in mm : 5.00...5.20

#### SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100  
Rack travel in m: 12.00...12.10  
2nd speed rpm : 800  
Rack travel in m: 12.30...12.40  
3rd speed rpm : 600  
Rack travel in m: 12.30...12.50

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 12.00...12.10

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.40...9.50  
2nd pressure hPa : 150  
Rack travel in m: 9.70...9.80  
3rd pressure hPa : 600  
Rack travel in m: 11.60...11.90

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 800  
Del.quantity cm3/ : 144.0...148.0  
1000 s: (141.0...151.0)

Spread cm3 : 6.00  
1000 s: (9.0)  
Aneroid pressure h: 1000  
Speed rpm : 600  
Del.quantity cm3/ : 142.0...146.0  
1000 s: (139.0...149.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 75.0...77.0  
1000 s: (73.0...79.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 11.00  
Speed rpm : 1150...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 120.0...130.0  
1000 s: (117.0...133.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.00...5.20  
Del.quantity cm3/ : 9.0...13.0  
1000 s: (6.5...15.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

#### Remarks:

: MAN #3-7263

Start-of-delivery mark is at start of  
delivery of cylinder 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : SNF  
Edition : 26.02.93  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 403 546 021  
  
Injection pump  
Pump designation : PE6MW100/720RS1229  
EP type number : 0 413 506 108  
Governor  
Governor design. : RQV250...1200MW93-3  
Governor no. : 0 420 083 287

Customer-spec. information  
Customer : SNF

Engine : WD 612.95

1st version kW : 191.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70  
: (3.55...3.75)  
Rack travel in mm : 9.00...12.00

007

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 14.40...14.50

Del.quantity cm3/ : 15.1...15.3

100 s: (14.8...15.6)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 9.1...9.3

Del.quantity cm3/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1250  
travel mm : 8.20...8.60

2nd speed rpm : 1050  
travel mm : 6.30...6.50

3rd speed rpm : 500  
travel mm : 2.70...3.30

4th speed rpm : 250  
travel mm : 0.80...1.20

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1200  
Aneroid pressure h: 1200  
Del.quantity : 151.0...153.0  
1000 : (148.0...156.0)  
Spread cm3 : 4.00  
1000 : (7.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 108...116

Testing:  
1st rack travel in: 13.60

Speed rpm : 1240...1250  
2nd rack travel in: 4.00  
Speed rpm : 1325...1355  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 74...82  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 9.2

#### Testing:

Speed rpm : 150  
Minimum rack travel: 10.00  
Speed rpm : 250  
Rack travel in mm : 9.10...9.30

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 14.40...14.50

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 12.00...12.10  
2nd pressure hPa : 600  
Rack travel in m: 12.50...12.60  
3rd pressure hPa : 800  
Rack travel in m: 13.50...13.80

#### START CUT-OUT

Speed 1/min : 180 (200)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 157.0...161.0  
1000 s: (154.0...164.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (9.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 98.0...100.0  
1000 s: (96.0...102.0)

#### BREAKAWAY

DO8

1st version  
1mm rack travel less than

full load rack tr: 13.60  
Speed rpm : 1240...1250

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...140.0  
1000 s: (127.0...143.0)

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 9.10...9.30  
Del.quantity cm<sup>3</sup>/ : 18.0...22.0  
1000 s: (15.5...24.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD  
Edition : 21.09.92  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 403 548 027AG  
Injection pump  
Pump designation : PE8MW100/720LS1173  
EP type number : 0 413 508 108  
Governor  
Governor design. : RQV300...1150MW99  
Governor no. : 0 420 083 163

Customer-spec. information  
Customer : KHD

Engine : F8L513

1st version kW : 163.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20  
: (3.05...3.25)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-  
4- 3

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1150  
Rack travel in mm : 10.30...10.40  
Del.quantity cm<sup>3</sup>/ : 8.9...9.1  
100 s: (8.7...9.3)  
Spread cm<sup>3</sup> : 0.3  
100 s: (0.6)

2nd speed rpm : 300.0  
Rack travel in mm : 4.9...5.1  
Del.quantity cm<sup>3</sup>/ : 1.1...1.5  
100 s: (0.8...1.7)  
Spread cm<sup>3</sup> : 0.3  
100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1280  
travel mm : 11.10...11.50  
2nd speed rpm : 1190  
travel mm : 10.10...10.30  
3rd speed rpm : 400  
travel mm : 2.90...3.50  
4th speed rpm : 300  
travel mm : 2.20...2.60

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1200  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1150  
Del.quantity : 89.0...91.0  
1000 : (87.0...93.0)  
Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 45...53

Testing:

1st rack travel in: 9.30  
Speed rpm : 1190...1200  
2nd rack travel in: 3.50  
Speed rpm : 1275...1305  
4th rack travel in: 1370  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 13...21  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.0

Testing:

Speed rpm : 100  
Minimum rack travel: 6.50  
Speed rpm : 300  
Rack travel in mm : 4.90...5.10

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 10.30...10.40  
2nd speed rpm : 650  
Rack travel in m: 10.60...10.70  
3rd speed rpm : 1000  
Rack travel in m: 10.50...10.60

START CUT-OUT

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 82.5...85.5  
1000 s: (80.0...88.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.30  
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (132.0...158.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.90...5.10  
Del.quantity cm<sup>3</sup>/ : 11.0...15.0  
1000 s: (8.5...17.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD  
Edition : 21.09.92  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 403 548 032AA  
Injection pump  
Pump designation : PE8MW100/720LS1173  
EP type number : 0 413 508 108  
Governor  
Governor design. : RQ300/1150MW61-2  
Governor no. : 0 420 082 036

Customer-spec. information  
Customer : KHD

Engine : F8L513

1st version kW : 168.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 08...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20  
: (3.05...3.25)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-  
4- 3

Phasing : 0-45-90-135-180-225-  
270-315  
Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 10.50...10.60

Del.quantity cm3/ : 9.3...9.5

100 s: (9.1...9.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 4.9...5.1

Del.quantity cm3/ : 1.1...1.5

100 s: (0.8...1.7)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1270

travel mm : 8.60...9.00

2nd speed rpm : 1210

travel mm : 6.60...6.80

3rd speed rpm : 420

travel mm : 3.50...4.10

4th speed rpm : 300

travel mm : 1.50...1.90

## GUIDE SLEEVE POSITION

Control-lever position

Degree: 107

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 93.0...95.0

1000 : (91.0...97.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 26...34

Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:  
1st rack travel in: 9.50  
Speed rpm : 1190...1205  
2nd rack travel in: 3.50  
Speed rpm : 1240...1270  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 8...16  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.0

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.50  
Speed rpm : 300  
Rack travel in mm : 4.90...5.10

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 10.50...10.60  
2nd speed rpm : 650  
Rack travel in m: 10.80...10.90  
3rd speed rpm : 1000  
Rack travel in m: 10.70...10.80

#### START CUT-OUT

Speed 1/min : 220 (250)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 91.5...94.5  
1000 s: (89.0...97.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.50  
Speed rpm : 1190...1205

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (132.0...158.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.90...5.10  
Del.quantity cm<sup>3</sup>/ : 11.0...15.0  
1000 s: (8.5...17.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD  
Edition : 21.09.92  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 403 548 032AB  
Injection pump  
Pump designation : PE8MW100/720LS1173  
EP type number : 0 413 508 108  
Governor  
Governor design. : RQ300/1150MW61-2  
Governor no. : 0 420 082 036

Customer-spec. information  
Customer : KHD

Engine : F8L513

1st version kW : 174.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20  
: (3.05...3.25)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-  
4- 3

Phasing : 0-45-90-135-180-225-  
270-315  
Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1150  
Rack travel in mm : 10.80...10.90  
Del. quantity cm<sup>3</sup>/ : 9.7...9.9  
100 s: (9.5...10.1)  
Spread cm<sup>3</sup> : 0.3  
100 s: (0.6)

2nd speed rpm : 300.0  
Rack travel in mm : 4.9...5.1  
Del. quantity cm<sup>3</sup>/ : 1.1...1.5  
100 s: (0.8...1.7)  
Spread cm<sup>3</sup> : 0.3  
100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1270  
travel mm : 8.60...9.00  
2nd speed rpm : 1210  
travel mm : 6.60...6.80  
3rd speed rpm : 420  
travel mm : 3.50...4.10  
4th speed rpm : 300  
travel mm : 1.50...1.90

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: 107  
Speed rpm : 600  
Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1150  
Del. quantity : 97.0...99.0  
1000 : (95.0...101.0)  
Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 26...34

Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:  
1st rack travel in: 9.80  
Speed rpm : 1190...1205  
2nd rack travel in: 3.50  
Speed rpm : 1245...1275  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 8...16  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.0

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.50  
Speed rpm : 300  
Rack travel in mm : 4.90...5.10

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 10.80...10.90  
2nd speed rpm : 650  
Rack travel in m: 11.10...11.20  
3rd speed rpm : 1000  
Rack travel in m: 11.00...11.10

#### START CUT-OUT

Speed 1/min: 220 (250)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 96.5...99.5  
1000 s: (94.0...102.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.80  
Speed rpm : 1190...1205

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (132.0...158.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.90...5.10  
Del.quantity cm<sup>3</sup>/ : 11.0...15.0  
1000 s: (8.5...17.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD  
 Edition : 21.09.92  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 403 548 032AC  
 Injection pump  
 Pump designation : PE8MW100/720LS1173  
 EP type number : 0 413 508 108  
 Governor  
 Governor design. : RQ300/1150MW61-2  
 Governor no. : 0 420 082 036

Customer-spec. information  
 Customer : KHD

Engine : F8L513

1st version kW : 178.0  
 Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20  
 : (3.05...3.25)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-  
 4- 3

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1150  
 Rack travel in mm : 11.00...11.10  
 Del.quantity cm3/ : 9.9...10.1  
 100 s: (9.7...10.3)

Spread cm3 : 0.3  
 100 s: (0.6)

2nd speed rpm : 300.0  
 Rack travel in mm : 4.9...5.1  
 Del.quantity cm3/ : 1.1...1.5  
 100 s: (0.8...1.7)  
 Spread cm3 : 0.3  
 100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1270  
 travel mm : 8.60...9.00  
 2nd speed rpm : 1210  
 travel mm : 6.60...6.80  
 3rd speed rpm : 420  
 travel mm : 3.50...4.10  
 4th speed rpm : 300  
 travel mm : 1.50...1.90

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: 107  
 Speed rpm : 600  
 Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1150  
 Del.quantity : 99.0...101.0  
 1000 : (97.0...103.0)  
 Spread cm3 : 3.50  
 1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 26...34

Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:  
1st rack travel in: 10.00  
Speed rpm : 1190...1205  
2nd rack travel in: 3.50  
Speed rpm : 1245...1275  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 8...16  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.0

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.50  
Speed rpm : 300  
Rack travel in mm : 4.90...5.10

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 11.00...11.10  
2nd speed rpm : 650  
Rack travel in m: 11.30...11.40  
3rd speed rpm : 1000  
Rack travel in m: 11.20...11.30

#### START CUT-OUT

Speed 1/min : 220 (250)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 98.5...101.5  
1000 s: (96.0...104.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.00  
Speed rpm : 1190...1205

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (132.0...158.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.90...5.10  
Del.quantity cm<sup>3</sup>/ : 11.0...15.0  
1000 s: (8.5...17.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MWM  
Edition : 15.06.93  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 9 400 083 423  
  
Injection pump  
Pump designation : PES3A80D320/3RS1264  
EP type number : 9 400 083 053  
Governor  
Governor design. : RSV350...900A7C627R  
Governor no. : 9 420 083 264

Customer-spec. information  
Customer : MWM

Engine : D225-3

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.20...2.30  
: (2.15...2.35)

Rack travel in mm : 9.00...12.00

Firing order : 1- 2- 3

Phasing : 0-120-240

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
& maximum rack tra: 21.00  
Difference \* CS : 4.00...5.00

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 10.20...10.30

Del.quantity cm3/ : 5.1...5.2

100 s: (5.0...5.4)

Spread cm3 : 0.2

100 s: (0.4)

2nd speed rpm : 350.0

Rack travel in mm : 7.3...7.5

Del.quantity cm3/ : 0.8...1.1

100 s: (0.6...1.3)

Spread cm3 : 0.4

100 s: (0.6)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 6.00

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 900

Del.quantity : 51.5...52.5

1000 : (50.0...54.0)

Spread cm3 : 2.50

1000 : (4.00)

## RATED SPEED

### 1st version

Control lever

position degrees: 107...115

Testing:

1st rack travel in: 9.20

Speed rpm : 940...945  
2nd rack travel in: 4.00  
Speed rpm : 965...978  
4th rack travel in: 1100  
Speed rpm : 0.30...1.70

#### LOW IDLE 1

Control lever  
position degrees: 75...83  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 350  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 420...480

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 10.20...10.30  
2nd speed rpm : 500  
Rack travel in m: 10.20...10.40  
5th speed rpm : 400  
Rack travel in m: 10.90...11.50

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.20  
Speed rpm : 940...945

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.90...6.10

Remarks:

:

#### APPLICATION

Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MWM  
Edition : 15.06.93  
Replaces : -  
Test oil : ISO-4113

Combination no. : 9 400 083 427

Injection pump  
Pump designation : PES4A80D320/3RS1265  
EP type number : 9 400 083 055  
Governor  
Governor design. : RSV350...900A7C627R  
Governor no. : 9 420 083 264

Customer-spec. information  
Customer : MWM

Engine : D225-4

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 2.20...2.30  
: (2.15...2.35)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
& maximum rack tra: 21.00  
Difference ° CS : 4.00...5.00

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 10.20...10.30

Del.quantity cm<sup>3</sup>/ : 5.1...5.2

100 s: (5.0...5.4)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

2nd speed rpm : 350.0  
Rack travel in mm : 7.3...7.5  
Del.quantity cm<sup>3</sup>/ : 0.8...1.1  
100 s: (0.6...1.3)

Spread cm<sup>3</sup> : 0.4  
100 s: (0.6)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
Click setting x : 6.00

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 900  
Del.quantity : 51.5...52.5  
1000 : (50.0...54.0)  
Spread cm<sup>3</sup> : 2.50  
1000 : (4.00)

## RATED SPEED

### 1st version

Control Lever  
position degrees: 107...115

Testing:

1st rack travel in: 9.20

Speed rpm : 940...945  
2nd rack travel in: 4.00  
Speed rpm : 965...978  
4th rack travel in: 1100  
Speed rpm : 0.30...1.70

#### LOW IDLE 1

Control lever  
position degrees: 75...83  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 350  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 420...480

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 10.20...10.30  
2nd speed rpm : 500  
Rack travel in m: 10.20...10.40  
5th speed rpm : 400  
Rack travel in m: 10.90...11.50

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.20  
Speed rpm : 940...945

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.90...6.10

Remarks:

:

#### APPLICATION

Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MWM  
Edition : 15.06.93  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 9 400 083 429  
  
Injection pump  
Pump designation : PES6A80D320/3RS1261  
EP type number : 9 400 083 057  
Governor  
Governor design. : RSV350...900A7C627R  
Governor no. : 9 420 083 264

Customer-spec. information  
Customer : MWM

Engine : D225-6

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 419 992 198  
  
Inlet press., bar : 1.50  
  
Test nozzle holder  
assembly : 0 681 343 009  
  
Opening  
pressure, bar : 172...175  
  
Test lines : 1 680 750 003  
  
Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
  
Prestroke mm : 2.20...2.30  
: (2.15...2.35)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
& maximum rack tra: 21.00  
Difference ° CS : 4.00...5.00

## BASIC SETTING

1st speed rpm : 900  
  
Rack travel in mm : 10.20...10.30  
  
Del. quantity cm<sup>3</sup>/ : 5.1...5.2  
100 s: (5.0...5.4)  
  
Spread cm<sup>3</sup> : 0.2  
100 s: (0.4)

2nd speed rpm : 350.0  
Rack travel in mm : 7.3...7.5  
Del. quantity cm<sup>3</sup>/ : 0.8...1.1  
100 s: (0.6...1.3)  
Spread cm<sup>3</sup> : 0.4  
100 s: (0.6)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
Click setting x : 6.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 900  
Del. quantity : 51.5...52.5  
1000 : (50.0...54.0)  
Spread cm<sup>3</sup> : 2.50  
1000 : (4.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 107...115

Testing:  
1st rack travel in: 9.20

Speed rpm : 940...945  
2nd rack travel in: 4.00  
Speed rpm : 965...978  
4th rack travel in: 1100  
Speed rpm : 0.30...1.70

#### LOW IDLE 1

Control lever  
position degrees: 75...83  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 350  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 420...480

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 10.20...10.30  
2nd speed rpm : 500  
Rack travel in m: 10.20...10.40  
5th speed rpm : 400  
Rack travel in m: 10.90...11.50

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.20  
Speed rpm : 940...945

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.90...6.10

Remarks:

:

#### APPLICATION

Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM  
Edition : 17.06.93  
Replaces : 13.03.92  
Test oil : ISO-4113

Combination no. : 9 400 083 449DD

Injection pump  
Pump designation : PES6A100D320/3RS2691  
EP type number : 9 410 230 025  
Governor  
Governor design. : RSV400...1100A2C2209  
R

Governor no. : 9 420 083 201

Cust. part no. : 3354913

Customer-spec. information  
Customer : CUMMINS

Engine : 6 CT 8.3 L

1st version kW : 129.1  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
(2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
& maximum rack tra: 21.00  
Difference ° CS : 3.00...4.00

## BASIC SETTING

1st speed rpm : 1175

Rack travel in mm : 10.10...10.20

Del.quantity cm<sup>3</sup>/ : 8.7...8.9

100 s: (8.5...9.1)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.6...5.8

Del.quantity cm<sup>3</sup>/ : 1.6...2.0

100 s: (1.4...2.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1175

Del.quantity : 87.5...89.5

1000 : (85.5...91.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 87...95

Testing:

1st rack travel in: 9.10  
Speed rpm : 1215...1225  
2nd rack travel in: 4.00  
Speed rpm : 1245...1275  
4th rack travel in: 1400  
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever  
position degrees: 62...70  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.2

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.60...5.80  
Rack travel in mm : 2.00  
Speed rpm : 570...630

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1175  
Rack travel in m: 10.10...10.20  
2nd speed rpm : 500  
Rack travel in m: 11.30...11.50  
4th speed rpm : 800  
Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 90.5...93.5  
1000 s: (88.0...96.0)  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 92.5...95.5  
1000 s: (90.0...98.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.10  
Speed rpm : 1215...1225

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 135.0...149.0  
1000 s: (132.0...152.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.60...5.80  
Del.quantity cm<sup>3</sup>/ : 16.5...20.5  
1000 s: (14.0...23.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

: VERSAO 33

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 5,9 x  
 Edition : 15.06.93  
 Replaces : 01.93  
 Test oil : ISO-4113  
 Combination no. : 9 400 083 459  
 Injection pump  
 Pump designation : PES6A95D120RS2822  
 EP type number : 9 400 084 029  
 Governor  
 Governor design. : RQV350...1250AB1235  
 -2R  
 Governor no. : 9 420 080 311

Customer-spec. information  
 Customer : CUMMINS

Engine : 6 BT

1st version kW : 119.3  
 Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 2.75...2.85  
 : (2.70...2.90)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance ÷ - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
 & maximum rack tra: 21.00  
 Difference ° CS : 2.00...3.00

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 12.70...12.80

Del.quantity cm<sup>3</sup>/ : 8.6...8.8

100 s: (8.4...9.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.0...5.2

Del.quantity cm<sup>3</sup>/ : 0.6...1.0

100 s: (0.4...1.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1300

travel mm : 6.80...6.90

2nd speed rpm : 350

travel mm : 1.20...1.70

3rd speed rpm : 700

travel mm : 4.00...4.50

4th speed rpm : 1550

travel mm : 8.30...8.80

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1530

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250  
Aneroid pressure h: 600  
Del.quantity : 86.0...88.0  
1000 : (84.0...90.0)  
Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 107...115

#### Testing:

1st rack travel in: 11.70  
Speed rpm : 1310...1320  
2nd rack travel in: 4.00  
Speed rpm : 1545...1575  
4th rack travel in: 1750  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 63...71

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.00  
Speed rpm : 350  
Rack travel in mm : 5.00...5.20

#### CONSTANT REGULATION

Speed rpm : 475...575

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : 600  
Rack travel mm : 12.70...12.80

##### Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 11.60...11.90

2nd pressure hPa : 320

Rack travel in m: 11.70...11.80

3rd pressure hPa : 410

Rack travel in m: 12.30...12.50

#### START CUT-OUT

Speed 1/min : 270 (290)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 600  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 80.0...83.0  
1000 s: (77.5...85.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 64.0...67.0  
1000 s: (62.0...69.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 11.70  
Speed rpm : 1310...1320

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 115.0...135.0  
1000 s: (110.0...140.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.00...5.20  
Del.quantity cm<sup>3</sup>/ : 6.0...10.0  
1000 s: (4.0...12.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

: C.D.C. # 3355394

Start-of-delivery mark 9.5° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MWM  
Edition : 15.06.93  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 9 400 085 223  
Injection pump  
Pump designation : PES3A80D320RS1281  
EP type number : 9 400 083 054  
Governor  
Governor design. : RSV350...1400A2C2129  
-3R  
Governor no. : 9 420 083 265

Customer-spec. information  
Customer : MWM

Engine : D 229-3

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.20...2.30  
: (2.15...2.35)

Rack travel in mm : 9.00...12.00

Firing order : 1- 2- 3

Phasing : 0-120-240

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
& maximum rack tra: 21.00  
Difference \* CS : 4.00...5.00

## BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 9.90...10.00

Del.quantity cm<sup>3</sup>/ : 5.4...5.5

100 s: (5.3...5.7)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

2nd speed rpm : 350.0

Rack travel in mm : 6.9...7.1

Del.quantity cm<sup>3</sup>/ : 0.6...0.9

100 s: (0.4...1.1)

Spread cm<sup>3</sup> : 0.4

100 s: (0.6)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.50

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1400

Del.quantity : 54.5...55.5

1000 : (53.0...57.0)

Spread cm<sup>3</sup> : 2.50

1000 : (4.00)

## RATED SPEED

### 1st version

Control lever

position degrees: 108...116

Testing:

1st rack travel in: 8.90  
Speed rpm : 1440...1450  
2nd rack travel in: 4.00  
Speed rpm : 1495...1525  
4th rack travel in: 1700  
Speed rpm : 0.30...1.70

#### LOW IDLE 1

Control lever  
position degrees: 74...82  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.5

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 350  
Rack travel in mm : 6.90...7.10  
Rack travel in mm : 2.00  
Speed rpm : 640...700

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1400  
Rack travel in m: 9.90...10.00  
2nd speed rpm : 500  
Rack travel in m: 10.70...10.80  
3rd speed rpm : 700  
Rack travel in m: 10.60...10.80  
4th speed rpm : 1100  
Rack travel in m: 10.20...10.50

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 500  
Del.quantity cm3/ : 48.0...51.0  
1000 s: (46.5...52.5)  
Speed rpm : 700  
Del.quantity cm3/ : 50.5...53.5  
1000 s: (49.0...55.0)  
Speed rpm : 1100  
Del.quantity cm3/ : 54.5...57.5  
1000 s: (53.0...59.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 8.90  
Speed rpm : 1440...1450

#### STARTING FUEL DELIVERY

Speed rpm : 100

D28

Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.90...7.10  
Del.quantity cm3/ : 6.5...9.5  
1000 s: (4.5...11.5)  
Spread cm3 : 4.00  
1000 s: (6.00)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MWM  
 Edition : 15.06.93  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 085 239  
 Injection pump  
 Pump designation : PES6A90D32ORS2701  
 EP type number : 9 400 083 094  
 Governor  
 Governor design. : RSV350...1150A2C2097  
 -1R  
 Governor no. : 9 420 083 267

Customer-spec. information  
 Customer : MWM

Engine : TD229-6

1st version kW : 106.7  
 Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.65...2.75  
 : (2.60...2.80)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - " : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
 & maximum rack tra: 21.00  
 Difference ° CS : 4.00...5.00

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 10.80...10.90

Del.quantity cm<sup>3</sup>/ : 8.1...8.2

100 s: (7.9...8.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.7)

2nd speed rpm : 350.0

Rack travel in mm : 5.3...5.5

Del.quantity cm<sup>3</sup>/ : 0.8...1.2

100 s: (0.6...1.4)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 81.0...82.0

1000 : (79.0...84.0)

Spread cm<sup>3</sup> : 3.00

1000 : (7.00)

## RATED SPEED

1st version

Control lever  
position degrees: 93...101

Testing:

1st rack travel in: 9.80  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1240...1270  
4th rack travel in: 1400  
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever  
position degrees: 67...75  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 4.9

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 350  
Rack travel in mm : 5.30...5.50  
Rack travel in mm : 2.00  
Speed rpm : 535...595

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 10.80...10.90  
2nd speed rpm : 500  
Rack travel in m: 11.20...11.30  
3rd speed rpm : 700  
Rack travel in m: 11.20...11.30  
4th speed rpm : 950  
Rack travel in m: 11.00...11.10

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500  
Del.quantity cm3/ : 74.0...77.0  
1000 s: (72.0...79.0)  
Speed rpm : 700  
Del.quantity cm3/ : 76.5...79.5  
1000 s: (74.5...81.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.80  
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.30...5.50  
Del.quantity cm3/ : 8.0...12.0  
1000 s: (6.0...14.0)  
Spread cm3 : 4.50  
1000 s: (7.00)

Remarks:

: VALMET

APPLICATION

Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MWM  
Edition : 15.06.93  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 9 400 085 240  
Injection pump  
Pump designation : PES4A90D320RS2702  
EP type number : 9 400 083 095  
Governor  
Governor design. : RSV350...1150A2C2129  
-4R  
Governor no. : 9 420 083 268

Customer-spec. information  
Customer : MWM

Engine : D 229-4

1st version kW : 75.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 2.65...2.75  
: (2.60...2.80)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
& maximum rack tra: 21.00  
Difference ° CS : 3.00...4.00

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 9.00...9.10

Del.quantity cm3/ : 6.3...6.4

100 s: (6.1...6.6)

Spread cm3 : 0.3

100 s: (0.7)

2nd speed rpm : 350.0

Rack travel in mm : 5.6...5.8

Del.quantity cm3/ : 1.0...1.4

100 s: (0.8...1.6)

Spread cm3 : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.75

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 63.5...64.5

1000 : (61.5...66.5)

Spread cm3 : 3.00

1000 : (7.00)

## RATED SPEED

1st version

Control lever  
position degrees: 95...103

Testing:

1st rack travel in: 8.00  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1230...1260  
4th rack travel in: 1400  
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever  
position degrees: 70...78  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.2

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 350  
Rack travel in mm : 5.60...5.80  
Rack travel in mm : 2.00  
Speed rpm : 560...620

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 9.00...9.10  
2nd speed rpm : 500  
Rack travel in m: 10.10...10.20  
3rd speed rpm : 800  
Rack travel in m: 9.70...9.90  
4th speed rpm : 1000  
Rack travel in m: 9.10...9.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500  
Del.quantity cm3/ : 60.5...63.5  
1000 s: (58.5...65.5)  
Speed rpm : 800  
Del.quantity cm3/ : 65.5...68.5  
1000 s: (63.5...70.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.00  
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 19.00...21.00

Remarks:

: VALMET

APPLICATION

Tractor (tractor engines)



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MWM  
Edition : 15.06.93  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 9 400 085 243  
  
Injection pump  
Pump designation : PES4A80D32ORS1282-1  
EP type number : 9 400 083 097  
Governor  
Governor design. : RS350/1500A2C2073-2R  
Governor no. : 9 420 083 269

Customer-spec. information  
Customer : MWM

Engine : D 229-4

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 2.65...2.75  
: (2.60...2.80)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
& maximum rack tra: 21.00  
Difference ° CS : 4.00...5.00

## BASIC SETTING

1st speed rpm : 1500

Rack travel in mm : 9.20...9.30

Del.quantity cm3/ : 5.8...5.9

100 s: (5.6...6.0)

Spread cm3 : 0.2

100 s: (0.4)

2nd speed rpm : 350.0

Rack travel in mm : 6.0...6.2

Del.quantity cm3/ : 0.7...1.0

100 s: (0.5...1.2)

Spread cm3 : 0.4

100 s: (0.6)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.50

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1500

Del.quantity : 58.0...59.0

1000 : (56.5...60.5)

Spread cm3 : 2.50

1000 : (4.00)

## RATED SPEED

### 1st version

Control lever

position degrees: 111...119

Testing:

1st rack travel in: 8.20

Speed rpm : 1540...1550  
2nd rack travel in: 4.00  
Speed rpm : 1585...1615  
4th rack travel in: 1750  
Speed rpm : 0.30...1.70

Remarks:

:

#### LOW IDLE 1

Control lever

position degrees: 73...81

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 6.1

#### Testing:

Speed rpm : 250

Minimum rack trave: 8.00

Speed rpm : 350

Rack travel in mm : 6.00...6.20

Rack travel in mm : 4.00

Speed rpm : 370...430

Speed rpm : 600

Maximum rack trave: 1.50

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1500

Rack travel in m: 9.20...9.30

2nd speed rpm : 500

Rack travel in m: 10.60...10.70

3rd speed rpm : 900

Rack travel in m: 10.20...10.40

4th speed rpm : 1200

Rack travel in m: 9.50...9.80

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 500

Del.quantity cm3/ : 58.0...61.0

1000 s: (56.5...62.5)

Speed rpm : 900

Del.quantity cm3/ : 62.5...65.5

1000 s: (61.0...67.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 8.20

Speed rpm : 1540...1550

#### STARTING FUEL DELIVERY

Speed rpm : 100

Rack travel in mm : 19.00...21.00

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MWM  
Edition : 15.06.93  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 9 400 085 257  
  
Injection pump  
Pump designation : PES4A80D32ORS1282  
EP type number : 9 400 083 056  
Governor  
Governor design. : RSV350...1100A2C2129  
-6R  
Governor no. : 9 420 083 270

Customer-spec. information  
Customer : MWM

Engine : D 229-4

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.20...2.30  
: (2.15...2.35)

Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00

& maximum rack tra: 21.00

Difference ° CS : 4.00...5.00

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 8.70...8.80

Del. quantity cm<sup>3</sup>/ : 4.8...4.9

100 s: (4.7...5.1)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

2nd speed rpm : 350.0

Rack travel in mm : 6.4...6.6

Del. quantity cm<sup>3</sup>/ : 1.0...1.3

100 s: (0.8...1.5)

Spread cm<sup>3</sup> : 0.4

100 s: (0.6)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.00

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1100

Del. quantity : 48.5...49.5

1000 : (47.0...51.0)

Spread cm<sup>3</sup> : 2.50

1000 : (4.00)

## RATED SPEED

### 1st version

Control lever

position degrees: 94...102

Testing:

1st rack travel in: 7.70  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1300  
Speed rpm : 0.30...1.70

#### LOW IDLE 1

Control lever

position degrees: 72...80

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 6.0

#### Testing:

Speed rpm : 100

Minimum rack travel: 19.00

Speed rpm : 350

Rack travel in mm : 6.40...6.60

Rack travel in mm : 2.00

Speed rpm : 605...665

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 8.70...8.80

2nd speed rpm : 500

Rack travel in m: 10.00...10.10

4th speed rpm : 900

Rack travel in m: 9.10...9.40

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 500

Del.quantity cm3/ : 49.5...52.5

1000 s: (48.0...54.0)

Speed rpm : 900

Del.quantity cm3/ : 48.5...51.5

1000 s: (47.0...53.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 7.70

Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100

Rack travel in mm : 19.00...21.00

Remarks:

:

#### APPLICATION

Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MWM  
 Edition : 15.06.93  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 085 268  
 Injection pump  
 Pump designation : PES4A90D320RS2702  
 EP type number : 9 400 083 095  
 Governor  
 Governor design. : RSV350...1150A2C2129  
 -7R  
 Governor no. : 9 420 083 273

Customer-spec. information  
 Customer : MWM

Engine : TD 229 EC-4

1st version kW : 66.2  
 Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.65...2.75  
 : (2.60...2.80)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
 & maximum rack tra: 21.00  
 Difference ° CS : 3.00...4.00

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 10.30...10.40

Del.quantity cm3/ : 7.7...7.8

100 s: (7.5...8.0)

Spread cm3 : 0.3

100 s: (0.7)

2nd speed rpm : 350.0

Rack travel in mm : 5.5...5.7

Del.quantity cm3/ : 1.1...1.5

100 s: (0.9...1.7)

Spread cm3 : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 77.5...78.5

1000 : (75.5...80.5)

Spread cm3 : 3.00

1000 : (7.00)

## RATED SPEED

1st version

Control lever  
position degrees: 93...101

Testing:  
1st rack travel in: 9.30  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1240...1270  
4th rack travel in: 1400  
Speed rpm : 0.30...1.70

LOW IDLE 1  
Control lever  
position degrees: 68...76  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.1

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 350  
Rack travel in mm : 5.50...5.70  
Rack travel in mm : 2.00  
Speed rpm : 550...610

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 10.30...10.40  
2nd speed rpm : 500  
Rack travel in m: 10.80...10.90  
4th speed rpm : 700  
Rack travel in m: 10.50...10.70

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 500  
Del.quantity cm3/ : 69.5...72.5  
1000 s: (67.5...74.5)  
Speed rpm : 700  
Del.quantity cm3/ : 71.0...74.0  
1000 s: (69.0...76.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.30  
Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 19.00...21.00

E10

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.50...5.70  
Del.quantity cm3/ : 11.0...15.0  
1000 s: (9.0...17.0)  
Spread cm3 : 4.50  
1000 s: (7.00)

Remarks:  
: VALMET

#### APPLICATION

Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 15.06.93  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 9 400 085 283  
  
Injection pump  
Pump designation : PES6A90D410RS2293  
EP type number : 0 410 896 031  
Governor  
Governor design. : RSV350...1250A0C1150  
-3L  
Governor no. : 9 420 083 255

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM 352-A

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve  
: 1 419 992 198  
  
Inlet press., bar : 1.50  
  
Test nozzle holder  
assembly : 0 681 343 009  
  
Opening  
pressure, bar : 172...175  
  
Test lines : 1 680 750 014  
  
Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
  
Prestroke mm : 2.15...2.25  
: (2.10...2.30)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1250  
Rack travel in mm : 10.00...10.10  
Del.quantity cm3/ : 6.1...6.2  
100 s: (5.9...6.5)  
Spread cm3 : 0.3  
100 s: (0.7)  
  
2nd speed rpm : 350.0  
Rack travel in mm : 7.1...7.3  
Del.quantity cm3/ : 1.0...1.4  
100 s: (0.8...1.6)  
Spread cm3 : 0.4  
100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
Click setting x : 3.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1250  
Del.quantity : 61.5...62.5  
1000 : (59.0...65.0)  
Spread cm3 : 3.00  
1000 : (7.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 100...108

Testing:  
1st rack travel in: 9.00  
Speed rpm : 1290...1300  
2nd rack travel in: 4.00  
Speed rpm : 1335...1365  
4th rack travel in: 1450  
Speed rpm : 0.30...1.70

## LOW IDLE 1

Control lever  
position degrees: 72...80  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.7

Testing:  
Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 350  
Rack travel in mm : 7.10...7.30  
Rack travel in mm : 2.00  
Speed rpm : 430...490

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 10.00...10.10  
2nd speed rpm : 500  
Rack travel in m: 10.00...10.20  
5th speed rpm : 400  
Rack travel in m: 11.20...11.80

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.00  
Speed rpm : 1290...1300

#### STARTING FUEL DELIVERY

Speed rpm : 200  
Rack travel in mm : 14.20...14.80

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MWM  
 Edition : 15.06.93  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 085 313  
 Injection pump  
 Pump designation : PES4A90D320RS2744  
 EP type number : 9 400 084 012  
 Governor  
 Governor design. : RSV350...1150A2C2129  
 -8R  
 Governor no. : 9 420 083 277

Customer-spec. information  
 Customer : MWM

Engine : TD 229 EC-4

1st version kW : 73.6  
 Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 2.70...2.80  
 : (2.65...2.85)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
 & maximum rack tra: 21.00  
 Difference ° CS : 3.00...4.00

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 10.50...10.60

Del.quantity cm<sup>3</sup>/ : 8.6...8.7

100 s: (8.4...8.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.7)

2nd speed rpm : 350.0

Rack travel in mm : 5.3...5.5

Del.quantity cm<sup>3</sup>/ : 1.1...1.5

100 s: (0.9...1.7)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 86.5...87.5

1000 : (84.5...89.5)

Spread cm<sup>3</sup> : 3.00

1000 : (7.00)

## RATED SPEED

1st version

Control lever  
position degrees: 99...107

Testing:

1st rack travel in: 9.50  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1260...1290  
4th rack travel in: 1450  
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever  
position degrees: 73...81  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 4.9

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 350  
Rack travel in mm : 5.30...5.50  
Rack travel in mm : 2.00  
Speed rpm : 555...615

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 10.50...10.60  
2nd speed rpm : 500  
Rack travel in m: 10.80...10.90  
3rd speed rpm : 800  
Rack travel in m: 10.80...10.90  
4th speed rpm : 960  
Rack travel in m: 10.60...10.80

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 80.0...83.0  
1000 s: (78.0...85.0)  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 84.5...87.5  
1000 s: (82.5...89.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.50  
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.30...5.50  
Del.quantity cm<sup>3</sup>/ : 11.0...15.0  
1000 s: (9.0...17.0)  
Spread cm<sup>3</sup> : 4.50  
1000 s: (7.00)

Remarks:

: VALMET

APPLICATION

Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MWM  
 Edition : 15.06.93  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 085 314  
 Injection pump  
 Pump designation : PES6A90D320RS2718  
 EP type number : 9 400 084 003  
 Governor  
 Governor design. : RSV350...1150A2C2097  
 -2R  
 Governor no. : 9 420 083 276

Customer spec. information  
 Customer : MWM

Engine : TD 229 EC-06

1st version kW : 117.8  
 Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.70...2.80  
 : (2.65...2.85)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
 & maximum rack tra: 21.00  
 Difference ° CS : 3.00...4.00

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 11.30...11.40

Del.quantity cm3/ : 8.6...8.7

100 s: (8.4...8.9)

Spread cm3 : 0.3

100 s: (0.7)

2nd speed rpm : 350.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 1.2...1.6

100 s: (1.0...1.8)

Spread cm3 : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 86.5...87.5

1000 : (84.5...89.5)

Spread cm3 : 3.00

1000 : (7.00)

## RATED SPEED

1st version

Control lever  
position degrees: 95...103

Testing:  
1st rack travel in: 10.30  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1255...1285  
4th rack travel in: 1450  
Speed rpm : 0.30...1.70

LOW IDLE 1  
Control lever  
position degrees: 70...78  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.5

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 350  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 575...635

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 11.30...11.40  
2nd speed rpm : 500  
Rack travel in m: 11.90...12.10  
4th speed rpm : 800  
Rack travel in m: 11.60...11.80

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 500  
Del.quantity cm3/ : 84.0...87.0  
1000 s: (82.0...89.0)  
Speed rpm : 800  
Del.quantity cm3/ : 85.5...88.5  
1000 s: (83.5...90.5)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.30  
Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.90...6.10  
Del.quantity cm3/ : 12.5...16.5  
1000 s: (10.5...18.5)  
Spread cm3 : 4.50  
1000 s: (7.00)

Remarks:  
: VALMET

#### APPLICATION

Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
 Edition : 15.06.93  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 085 327  
 Injection pump  
 Pump designation : PES6A95D410RS2772  
 EP type number : 9 400 084 018  
 Governor  
 Governor design. : RSV350...1250A0C1150  
 -4L  
 Governor no. : 9 420 083 255

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM 366 A

1st version kW : 121.0  
 Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30  
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 9.60...9.70

Del.quantity cm3/ : 8.1...8.3

100 s: (7.9...8.5)

Spread cm3 : 0.3

100 s: (0.8)

2nd speed rpm : 350.0

Rack travel in mm : 6.7...6.9

Del.quantity cm3/ : 1.3...1.7

100 s: (1.0...2.0)

Spread cm3 : 0.5

100 s: (0.9)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 3.25

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del.quantity : 81.0...83.0

1000 : (79.0...85.0)

Spread cm3 : 3.50

1000 : (8.00)

## RATED SPEED

1st version

Control lever

position degrees: 99...107

Testing:

1st rack travel in: 8.60

Speed rpm : 1290...1300

2nd rack travel in: 4.00

Speed rpm : 1325...1355

4th rack travel in: 1500

Speed rpm : 0.30...1.70

Remarks:

#### LOW IDLE 1

Control lever

position degrees: 71...79

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 6.3

APPLICATION

Combine-harvester

#### Testing:

Speed rpm : 100

Minimum rack trave: 19.00

Speed rpm : 350

Rack travel in mm : 6.70...6.90

Rack travel in mm : 2.00

Speed rpm : 420...480

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1250

Rack travel in m: 9.60...9.70

2nd speed rpm : 500

Rack travel in m: 9.60...9.80

5th speed rpm : 400

Rack travel in m: 10.80...11.40

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 800

Del.quantity cm3/ : 72.0...76.0

1000 s: (70.0...78.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 8.60

Speed rpm : 1290...1300

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 95.0...115.0

1000 s: (92.0...118.0)

Rack travel in mm : 13.90...14.10

#### LOW IDLE

Speed rpm : 350

Rack travel in mm : 6.70...6.90

Del.quantity cm3/ : 13.0...17.0

1000 s: (10.0...20.0)

Spread cm3 : 5.50

1000 s: (9.00)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM  
Edition : 21.04.93  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 9 400 085 354  
Injection pump  
Pump designation : PES6A100D320/3RS2691  
-2  
EP type number : 9 410 230 028  
Governor  
Governor design. : RQV350...1100AB1271R  
Governor no. : 9 420 080 343

Customer-spec. information  
Customer : CUMMINS

Engine : 6 CTA - 8.3 L

1st version kW : 180.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
& maximum rack tra: 21.00  
Difference ° CS : 3.00...4.00

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.70...13.80

Del. quantity cm3/ : 12.9...13.1

100 s: (12.7...13.3)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.9...6.1

Del. quantity cm3/ : 1.3...1.7

100 s: (1.0...1.9)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1100

travel mm : 7.70...7.90

2nd speed rpm : 350

travel mm : 1.20...1.60

3rd speed rpm : 600

travel mm : 3.90...4.50

4th speed rpm : 1150

travel mm : 8.00...8.60

5th speed rpm : 1290

travel mm : 9.50...10.10

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1160

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100  
Aneroid pressure h: 900  
Del.quantity : 129.0...131.0  
1000 : (127.0...133.0)  
Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

RATED SPEED

1st version

Control lever  
position degrees: 113...121

Testing:

1st rack travel in: 12.70  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1265...1295  
4th rack travel in: 1450  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 66...74

Testing:

Speed rpm : 100  
Minimum rack travel: 9.50  
Speed rpm : 350  
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

Speed rpm : 375...525

TORQUE CONTROL

Dimension a mm : 0.80  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 13.70...13.80  
2nd speed rpm : 750  
Rack travel in m: 14.50...14.60  
3rd speed rpm : 850  
Rack travel in m: 14.20...14.40  
4th speed rpm : 950  
Rack travel in m: 13.90...14.10

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 14.50...14.60

Measurement

Speed 1/min : 500

E20

1st pressure hPa : -

Rack travel in m: 11.30...11.50  
2nd pressure hPa : 400  
Rack travel in m: 12.00...12.20  
3rd pressure hPa : 580  
Rack travel in m: 13.50...13.80

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 142.5...145.5  
1000 s: (140.0...148.0)  
Aneroid pressure h: 900  
Speed rpm : 850  
Del.quantity cm<sup>3</sup>/ : 139.5...142.5  
1000 s: (137.0...145.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 82.5...84.5  
1000 s: (80.5...86.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.70  
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 165.0...179.0  
1000 s: (161.0...183.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.90...6.10  
Del.quantity cm<sup>3</sup>/ : 13.0...17.0  
1000 s: (10.5...19.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

: C.D.C. # 3355290

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM  
Edition : 21.04.93  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 9 400 085 355  
  
Injection pump  
Pump designation : PES6A100D12QRS2841  
EP type number : 9 400 084 033  
Governor  
Governor design. : RQV350...1400AB1272R  
Governor no. : 9 420 080 344

Customer-spec. information  
Customer : CUMMINS

Engine : 6 BT 140

1st version kW : 105.0  
Rated speed : 2800

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.85...2.95  
: (2.80...3.00)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
& maximum rack tra: 21.00  
Difference ° CS : 3.00...4.00

## BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 8.80...8.90

Del.quantity cm3/ : 8.0...8.2

100 s: (7.8...8.4)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 4.8...5.0

Del.quantity cm3/ : 0.5...0.9

100 s: (0.3...1.1)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1400

travel mm : 6.40...6.60

2nd speed rpm : 350

travel mm : 1.70...2.20

3rd speed rpm : 600

travel mm : 3.70...4.20

4th speed rpm : 1000

travel mm : 4.70...5.20

5th speed rpm : 1650

travel mm : 7.50...8.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 80.0...82.0

1000 : (78.0...84.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 102...110

Testing:  
1st rack travel in: 7.80  
Speed rpm : 1465...1480  
2nd rack travel in: 4.00  
Speed rpm : 1620...1650

LOW IDLE 1  
Control lever  
position degrees: 67...75

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 350  
Rack travel in mm : 4.80...5.00

CONSTANT REGULATION  
Speed rpm : 350...550

## START CUT-OUT

Speed 1/min : 270 (290)

## FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 81.5...84.5  
1000 s: (79.0...87.0)

## BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 7.80  
Speed rpm : 1465...1480

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 166.0...180.0  
1000 s: (163.0...183.0)  
Rack travel in mm : 19.00...21.00

## LOW IDLE

Speed rpm : 350  
Rack travel in mm : 4.80...5.00

Del.quantity cm<sup>3</sup>/ : 5.0...9.0  
1000 s: (3.0...11.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:  
: C.D.C # 3355313  
Start-of-delivery mark 9.5° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
 Edition : 15.06.93  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 085 360  
 Injection pump  
 Pump designation : PES4A95D410RS2843  
 EP type number : 9 400 084 034  
 Governor  
 Governor design. : RQV300...1400AB1273L  
 Governor no. : 9 420 080 346

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM 364

1st version kW : 66.0  
 Rated speed : 2800

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30  
 : (3.15...3.35)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 9.70...9.80

Del.quantity cm3/ : 6.9...7.1

100 s : (6.7...7.3)

Spread cm3 : 0.3

100 s : (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del.quantity cm3/ : 0.7...1.1

100 s : (0.5...1.4)

Spread cm3 : 0.5

100 s : (0.9)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1400  
 travel mm : 8.10...8.30

2nd speed rpm : 300  
 travel mm : 0.80...1.30

3rd speed rpm : 700  
 travel mm : 3.90...4.40

4th speed rpm : 1100  
 travel mm : 5.80...6.30

5th speed rpm : 1550  
 travel mm : 9.30...9.80

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 1445

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1400  
 Del.quantity : 69.5...71.5  
 1000 : (67.5...73.5)  
 Spread cm3 : 3.50  
 1000 : (8.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 108...116

Testing:  
1st rack travel in: 8.70  
Speed rpm : 1445...1455  
2nd rack travel in: 4.00  
Speed rpm : 1520...1550  
4th rack travel in: 1680  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 66...74

Testing:  
Speed rpm : 100  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.40...6.60

CONSTANT REGULATION  
Speed rpm : 450...550

#### START CUT-OUT

Speed 1/min : 250 (270)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 59.0...63.0  
1000 s: (57.0...65.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (8.00)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 8.70  
Speed rpm : 1445...1455

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 81.0...96.0  
1000 s: (78.5...98.5)  
Rack travel in mm : 13.80...14.00

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : SCA 11,1 i  
Edition : 21.04.93  
Replaces : 10.90  
Test oil : ISO-4113  
  
Combination no. : 9 400 087 424  
  
Injection pump  
Pump designation : PE6P120A720RS7020  
EP type number : 0 412 626 828  
Governor  
Governor design. : RQV200...1000PA539-8  
Governor no. : 0 421 813 635

Customer-spec. information  
Customer : SAAB-SCANIA

Engine : DS 11 34

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
: (4.95...5.15)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700  
  
Rack travel in mm : 12.90...13.00  
  
Del.quantity cm3/ : 20.8...21.0  
100 s: (20.5...21.3)  
  
Spread cm3 : 0.6  
100 s: (0.9)

2nd speed rpm : 225.0  
Rack travel in mm : 4.6...5.0  
Del.quantity cm3/ : 1.8...2.2  
100 s: (-)  
Spread cm3 : 0.3  
100 s: (0.6)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 225  
travel mm : 1.20...1.60  
2nd speed rpm : 350  
travel mm : 2.40...3.00  
3rd speed rpm : 650  
travel mm : 4.50...5.10  
4th speed rpm : 1045  
travel mm : 8.40...8.60  
5th speed rpm : 1150  
travel mm : 9.80...10.20

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1050  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 700  
Aneroid pressure h: 900  
Del.quantity : 208.0...210.0  
1000 : (205.0...213.0)

Spread cm3 : 6.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 113...121

Testing:  
1st rack travel in: 11.90  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1135...1165  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 61...69

Testing:  
Speed rpm : 125  
Minimum rack travel: 5.80  
Speed rpm : 225  
Rack travel in mm : 4.60...4.80  
Rack travel in mm : 2.00  
Speed rpm : 340...400

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.90...13.00

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.50...10.90  
2nd pressure hPa : 520  
Rack travel in m: 12.30...12.40  
3rd pressure hPa : 320  
Rack travel in m: 11.10...11.30

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 1000  
Del.quantity cm3/ : 198.0...206.0  
1000 s: (196.0...208.0)  
Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm3/ : 151.0...155.0  
1000 s: (149.0...157.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.90  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 275.0...325.0  
1000 s: (-)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 225  
Rack travel in mm : 4.60...4.80

Remarks:  
Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring  
preload on new delivery-valve holders  
to 2.9...3.1 mm.

Start-of-delivery setting with ROBO  
diaphragm.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FOR 7,8 o  
 Edition : 15.06.93  
 Replaces : 10.90  
 Test oil : ISO-4113  
 Combination no. : 9 400 087 444  
 Injection pump  
 Pump designation : PES6P110A720RS3268  
 EP type number : 9 400 087 073  
 Governor  
 Governor design. : RSV650...1250P8A530  
 -2  
 Governor no. : 9 420 082 327

Customer-spec. information  
 Customer : FNH-IVECO

Engine : 7.8 l  
 1st version kW : 190.0  
 Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve  
 : 9 401 087 403  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 017  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,6  
 Test lines : 1 680 750 015  
 Outside diameter  
 x wall thickness  
 x Length mm : 6.00x1.50x600  
 (A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 4.25...4.35  
 : (4.20...4.40)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
 & maximum rack tra: 21.00  
 Difference ° CS : 2.00...3.00

## BASIC SETTING

1st speed rpm : 1200  
 Rack travel in mm : 11.10...11.20  
 Del.quantity cm<sup>3</sup>/ : 16.2...16.4  
 100 s: (16.0...16.6)  
 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)  
 2nd speed rpm : 650.0  
 Rack travel in mm : 5.2...5.4  
 Del.quantity cm<sup>3</sup>/ : 2.2...2.6  
 100 s: (2.0...2.9)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
 Click setting x : 3.25

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1200  
 Aneroid pressure h: 1000  
 Del.quantity : 162.0...164.0  
 1000 : (160.0...166.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 98...106

### Testing:

1st rack travel in: 10.10  
Speed rpm : 1260...1270  
2nd rack travel in: 4.00  
Speed rpm : 1295...1315  
3rd rack travel in: 4.00  
Speed rpm : 1310...1330  
4th rack travel in: 1400  
Speed rpm : 0.30...1.70

### LOW IDLE 1

Control lever  
position degrees: 73...81  
Setting point w/out bumper spring  
Speed rpm : 650  
Rack travel in mm : 4.8  
Speed rpm : 650  
Rack travel in mm : 5.20...5.40  
Rack travel in mm : 2.00  
Speed rpm : 660...720

Aneroid/Altitude  
Compensator Test

### 1st version

Setting  
Speed rpm : 1200  
Pressure hPa : 1000  
Rack travel mm : 11.10...11.20

### Measurement

Speed 1/min : 1200

1st pressure hPa : -  
Rack travel in m: 8.00...8.20  
2nd pressure hPa : 400  
Rack travel in m: 8.60...8.70  
3rd pressure hPa : 600  
Rack travel in m: 10.70...11.00

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 67.5...69.5  
1000 s: (65.5...71.5)

## BREAKAWAY

### 1st version

F01

1mm rack travel less than

full load rack tr: 10.10  
Speed rpm : 1260...1270

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...170.0  
1000 s: (136.0...174.0)  
Rack travel in mm : 20.00...21.00

## LOW IDLE

Speed rpm : 650  
Rack travel in mm : 5.20...5.40  
Del.quantity cm3/ : 22.5...26.5  
1000 s: (20.0...29.0)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

## APPLICATION

Combine-harvester



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 u 1  
 Edition : 15.06.93  
 Replaces : 10.91  
 Test oil : ISO-4113  
 Combination no. : 9 400 087 449  
 Injection pump  
 Pump designation : PES6P120A320/3RS3264  
 EP type number : 9 400 087 075  
 Governor  
 Governor design. : RQV350...1100PA973  
 Governor no. : 9 420 080 293

Customer-spec. information  
 Customer : CUMMINS

Engine : 6 CTAA - 8.3 L

1st version kW : 216.6  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.45...3.55  
 : (3.40...3.60)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.50...11.60

Del.quantity cm3/ : 19.9...20.1

100 s: (19.6...20.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 0.5...1.1

100 s: (0.3...1.3)

Spread cm3 : 0.5

100 s: (0.8)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1150  
 travel mm : 7.00...7.10

2nd speed rpm : 350  
 travel mm : 1.40...1.80

3rd speed rpm : 650  
 travel mm : 4.30...4.70

4th speed rpm : 1400  
 travel mm : 8.80...9.20

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1325

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1200

Del.quantity : 199.0...201.0

1000 : (196.0...204.0)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 106...114

#### Testing:

1st rack travel in: 10.50  
Speed rpm : 1160...1170  
2nd rack travel in: 4.00  
Speed rpm : 1330...1360  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 66...74

#### Testing:

Speed rpm : 100  
Minimum rack travel: 8.00  
Speed rpm : 350  
Rack travel in mm : 5.90...6.10

#### CONSTANT REGULATION

Speed rpm : 425...575

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 11.50...11.60

##### Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 8.90...9.10

2nd pressure hPa : 480

Rack travel in m: 9.60...9.70

3rd pressure hPa : 800

Rack travel in m: 10.70...11.00

#### START CUT-OUT

Speed 1/min : 290 (310)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 700

F03

Del.quantity cm<sup>3</sup>/ : 204.0...208.0  
1000 s: (200.5...211.5)

Spread cm<sup>3</sup> : 6.00  
1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 116.0...119.0  
1000 s: (114.0...121.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 10.50

Speed rpm : 1160...1170

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 260.0...290.0  
1000 s: (256.0...294.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.90...6.10  
Del.quantity cm<sup>3</sup>/ : 5.0...11.0  
1000 s: (3.0...13.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (8.00)

Remarks:

Start-of-delivery mark is at 8° after  
start of delivery.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 u 3  
 Edition : 15.06.93  
 Replaces : 10.91  
 Test oil : ISO-4113  
 Combination no. : 9 400 087 463  
 Injection pump  
 Pump designation : PES6P120A320/3RS3264  
 EP type number : 9 400 087 075  
 Governor  
 Governor design. : RQV350...11DOPA973-1  
 Governor no. : 9 420 080 317

Customer-spec. information  
 Customer : CUMMINS

Engine : 6 CTAA - 8.3 l

1st version kW : 186.4  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 3.45...3.55  
 : (3.40...3.60)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.40...10.50

Del.quantity cm3/ : 17.1...17.3

100 s: (16.8...17.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 0.5...1.1

100 s: (0.3...1.3)

Spread cm3 : 0.5

100 s: (0.8)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1150

travel mm : 7.00...7.10

2nd speed rpm : 350

travel mm : 1.40...1.80

3rd speed rpm : 650

travel mm : 4.30...4.70

4th speed rpm : 1400

travel mm : 8.80...9.20

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1325

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del.quantity : 171.0...173.0

1000 : (168.0...176.0)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 105...113

#### Testing:

1st rack travel in: 9.40  
Speed rpm : 1160...1170  
2nd rack travel in: 4.00  
Speed rpm : 1305...1335  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 66...74

#### Testing:

Speed rpm : 100  
Minimum rack travel: 8.00  
Speed rpm : 350  
Rack travel in mm : 5.90...6.10

#### CONSTANT REGULATION

Speed rpm : 425...575

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 10.40...10.50

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.00...9.20  
2nd pressure hPa : 490  
Rack travel in m: 9.40...9.50  
3rd pressure hPa : 660  
Rack travel in m: 10.00...10.30

#### START CUT-OUT

Speed 1/min : 290 (310)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 700

Del.quantity cm<sup>3</sup>/ : 166.0...170.0  
1000 s: (162.5...173.5)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (12.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 118.0...121.0  
1000 s: (116.0...123.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.40  
Speed rpm : 1160...1170

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 260.0...290.0  
1000 s: (256.0...294.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.90...6.10  
Del.quantity cm<sup>3</sup>/ : 5.0...11.0  
1000 s: (3.0...13.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (8.00)

#### Remarks:

Start-of-delivery mark is at 8° after  
start of delivery.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 21.04.93  
Replaces : -  
Test oil : ISO-4113

Combination no. : 9 400 087 477

Injection pump  
Pump designation : PES6P120A72ORS3256-2  
EP type number : 9 400 087 080  
Governor  
Governor design. : RQV300...1300PA1057  
Governor no. : 9 420 080 338

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM 366 LA

1st version kw : 125.1  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
: (2.95...3.15)

Rack travel in mm : 20.00...21.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 4.80...5.40

Del.quantity cm3/ : 1.7...2.0

100 s: (1.4...2.3)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 300.0

Rack travel in mm : 7.2...7.5

Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 0.80...1.30

2nd speed rpm : 660  
travel mm : 3.80...4.30

3rd speed rpm : 960  
travel mm : 5.20...5.70

4th speed rpm : 1357  
travel mm : 8.00...8.50

5th speed rpm : 1492  
travel mm : 9.80...10.30

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1385

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1000  
Del.quantity : 17.0...20.0  
1000 : (14.0...23.0)  
Spread cm3 : 2.00  
1000 : (3.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 106...114

Testing:  
1st rack travel in: 9.60  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1415...1445  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 73...81

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 300  
Rack travel in mm : 7.30...7.50

CONSTANT REGULATION  
Speed rpm : 300...450

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 10.70...10.90

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.80...10.10  
2nd pressure hPa : 350  
Rack travel in m: 10.10...10.30  
3rd pressure hPa : 420  
Rack travel in m: 10.40...10.60

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

F07

1st version  
Aneroid pressure h: 1200  
Speed rpm : 1300  
Del.quantity cm3/ : 140.0...142.0  
1000 s: (137.0...145.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1200  
Speed rpm : 800  
Del.quantity cm3/ : 115.0...119.0  
1000 s: (112.0...122.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 63.0...65.0  
1000 s: (60.0...68.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.60  
Speed rpm : 1340...1350

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 90.0...110.0  
1000 s: (86.0...114.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 7.20...7.50  
Del.cuantity cm3/ : 10.0...16.0  
1000 s: (7.0...19.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

Start-of-delivery blocking at 4.05 mm  
after cyl. 1 start-of-delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 a61  
Edition : 21.04.93  
Replaces : 02.91  
Test oil : ISO-4113

Combination no. : 9 400 230 110

Injection pump  
Pump designation : PES6A100D320/3RS2691  
-4

EP type number : 9 410 230 030  
Governor  
Governor design. : RSV450...1100AOC2190  
-42R  
Governor no. : 0 420 233 248

Customer-spec. information  
Customer : C.D.C.

Engine : 6CT830

1st version kW : 150.6  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

F08

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
Phasing :  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100  
Rack travel in mm : 12.10...12.20  
Del.quantity cm3/ : 12.0...12.2  
100 s: (11.8...12.4)  
Spread cm3 : 0.4  
100 s: (0.6)

2nd speed rpm : 450.0  
Rack travel in mm : 5.7...5.9  
Del.quantity cm3/ : 1.4...1.8  
100 s: (1.2...2.0)  
Spread cm3 : 0.6  
100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Del.quantity : 120.0...122.0  
1000 : (118.0...124.0)  
Spread cm3 : 4.00  
1000 : (6.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 46...54

Testing:

1st rack travel in: 11.10  
Speed rpm : 1155...1165  
2nd rack travel in: 4.00  
Speed rpm : 1245...1255  
3rd rack travel in: 4.00  
Speed rpm : 1240...1270  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 22...30  
Setting point w/out bumper spring  
Speed rpm : 450  
Rack travel in mm : 5.3

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 450  
Rack travel in mm : 5.70...5.90

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 12.10...12.20  
2nd speed rpm : 750  
Rack travel in m: 13.20...13.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750  
Del.quantity cm3/ : 134.0...138.0  
1000 s: (132.0...140.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.10  
Speed rpm : 1155...1165

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 145.0...165.0  
1000 s: (140.0...170.0)  
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 450  
Rack travel in mm : 5.70...5.90

Del.quantity cm3/ : 14.5...18.5  
1000 s: (12.5...20.5)  
Spread cm3 : 6.00  
1000 s: (8.00)

Remarks:

: C.D.C. # 3915685  
Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

Limit shutoff stop screw to 1.0 mm.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MWM  
Edition : 15.06.93  
Replaces : -  
Test oil : ISO-4113

Combination no. : 9 407 083 263

Injection pump  
Pump designation : PES6A90D320RS2605  
EP type number : 9 400 083 078  
Governor  
Governor design. : RSV325...900A1C2132R  
Governor no. : 9 420 083 280

Customer-spec. information  
Customer : MWM

Engine : TD 229-6

1st version kW : 89.7  
Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.20...2.30  
: (2.15...2.35)  
Rack travel in mm : 9.00...12.00

F10

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
& maximum rack tra: 21.00  
Difference ° CS : 4.00...5.00

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 10.20...10.30

Del.quantity cm<sup>3</sup>/ : 7.3...7.4

100 s: (7.1...7.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.7)

2nd speed rpm : 325.0

Rack travel in mm : 6.9...7.1

Del.quantity cm<sup>3</sup>/ : 1.3...1.7

100 s: (1.1...1.9)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.25

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del.quantity : 73.0...74.0

1000 : (71.0...76.0)

Spread cm<sup>3</sup> : 3.00

1000 : (7.00)

## RATED SPEED

1st version

Control lever

position degrees: 93...101

Testing:

1st rack travel in: 9.20  
Speed rpm : 923...928  
2nd rack travel in: 4.00  
Speed rpm : 954...967  
4th rack travel in: 1050  
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever  
position degrees: 70...78  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 6.5

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 325  
Rack travel in mm : 6.90...7.10  
Rack travel in mm : 2.00  
Speed rpm : 365...425

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 10.20...10.30  
2nd speed rpm : 500  
Rack travel in m: 10.20...10.40  
5th speed rpm : 375  
Rack travel in m: 11.00...11.60

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.20  
Speed rpm : 923...928

STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 325  
Rack travel in mm : 6.90...7.10  
Del. quantity cm<sup>3</sup>/ : 13.5...17.5  
1000 s: (11.5...19.5)  
Spread cm<sup>3</sup> : 4.50  
1000 s: (7.00)

Remarks:

:

APPLICATION

Generator

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CDC  
Edition : 29.06.93  
replaces : 01.85  
Calibrating oil : ISO-4113  
  
Injection pump : VE4/12F1250R123-10  
Type number : 0 460 424 019  
Customer Part-No. :

Customer-specific information  
Customer : CUMMINS

Engine : 4BTA 3.9

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 016

Opening  
Pressure bar: 207.00...210.00

Perforated-plate  
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 840

Start of delivery  
Prestroke mm: 0.3  
(from BDC):  $\pm 0.02(0.04)$

Start of delivery block  
Piston stroke mm: 1.7  
mm:  $\pm 0.02(0.06)$

Outlet : A

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 850  
Setting value mm: 3.70...4.10  
Shutoff  
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 850  
Setting value bar: 5.90...6.50  
Shutoff  
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1100  
Del. quantity cm<sup>3</sup>/  
1000S.: 90.50...91.50

Shutoff  
electromagnet Volt: 12  
Dispersion cm<sup>3</sup>/: 4.0  
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 375  
Del. quantity cm<sup>3</sup>/  
1000S.: 22.00...28.00

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 5.5  
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1340  
Del. quantity cm<sup>3</sup>/  
1000S.: 28.00...34.00

Shutoff  
electromagnet Volt: 12

Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 105.00...145.00  
mind 1000S.: 105.0  
Shutoff  
electromagnet Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100  
TD travel mm: 4.60...5.40  
mm: (4.30...5.70)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 850

TD travel mm: 3.70...4.10  
mm: (3.20...4.60)

Shutoff  
electromagnet Volt: 12  
4th speed 1/min: 500  
TD travel mm: 1.80...2.60  
mm: (1.50...2.90)

Shutoff  
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500  
Supply-pump  
pressure bar: 4.30...4.90

Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 850  
Supply-pump  
pressure bar: 5.90...6.50

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1100  
Supply-pump  
pressure bar: 6.70...7.30

Shutoff  
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Shutoff  
electromagnet Volt: 12  
Overflow : 41.70...83.40  
quantity cm<sup>3</sup>/10s: (26.70...98.40)

2nd speed 1/min: 1250  
Shutoff  
electromagnet Volt: 12  
Overflow : 55.60...139.00  
quantity cm<sup>3</sup>/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1400

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

5th speed 1/min: 1340  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 28.00...34.00  
1000S.: (25.00...37.00)

8th speed 1/min: 1290  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 69.00...75.00  
1000S.: (66.00...78.00)

9th speed 1/min: 1250

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 84.50...87.50  
1000S.: (83.00...89.00)

12th speed 1/min: 1100

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 90.50...91.50  
1000S.: (88.0...94.0)

15th speed 1/min: 850

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 94.50...98.50  
1000S.: (93.00...100.00)

20th speed 1/min: 500

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 82.00...90.00  
1000S.: (80.00...92.00)

Mech. shutoff:  
Mech. Abst.ellung:

1st speed 1/min: 1250  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 375  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: -

Idle delivery:

1st speed 1/min: 375  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 22.00...28.00  
1000S.: (20.00...30.00)

Dispersion cm<sup>3</sup>/: 5.5  
1000S.: (7.0)

2nd speed 1/min: 450

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 0.00...2.00  
1000S.: (0.00...2.00)

5th speed 1/min: 300

Shutoff  
electromagnet Volt: -  
Del. quantity cm<sup>3</sup>/: 45.00...53.00  
1000S.: (43.00...55.00)

Automatic starting fuel delivery:

1st speed 1/min: 130

Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 105.00...145.00  
1000S.: (105.00...145.00)

2nd speed 1/min: 250  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 65.00...105.00  
1000S.: (65.00...105.00)

4th speed 1/min: 100  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 105.00...145.00  
1000S.: (105.00...145.00)

Shutoff electromagnet:

Cut-in  
min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: 5.0...5.4
MS1	mm: 1.3...1.5
Ya	mm: 35.8...37.8
Yb	mm: 44.1...49.7

Remarks:  
: CDC # 390 6316  
:

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CDC  
Edition : 29.06.93  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE4/12F1250R424  
Type number : 0 460 424 079  
Customer Part-No. :

Customer-specific information  
Customer : CDC

Engine : 4 BTAA 3.9

## TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 109

Opening  
Pressure bar: 207.00...210.00

Perforated-plate  
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 840

Start of delivery  
Prestroke mm: -  
(from BDC): -

Start of delivery block  
Piston stroke mm: 1.25  
mm:  $\pm 0.02(0.06)$

Outlet : A

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 850  
Charge press. hPa: 1000  
Setting value mm: 1.00...1.40  
Shutoff  
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1100  
Charge press hPa: 1000  
Setting value bar: 6.90...7.50  
Shutoff  
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 850  
Charge press. hPa: 1000  
Del. quantity cm3/  
1000S.: 84.50...85.50  
Shutoff  
electromagnet Volt: 12  
Dispersion cm3/: 5.0  
1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 500  
Del. quantity cm3/  
1000S.: 52.50...53.50  
Shutoff  
electromagnet Volt: 12  
Dispersion cm3/: 5.0  
1000S.: (6.0)

Low-idle speed regulation

Speed 1/min: 400  
Del. quantity cm3/  
1000S.: 14.50...18.50  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 5.5  
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1325  
Charge press hPa: 1000  
Del. quantity cm3/  
1000S.: 72.00...78.00  
Shutoff  
electromagnet Volt: 12

Start:

Speed 1/min: 100  
Del. quantity cm3/: 115.00...165.00  
mind 1000S.: 115.0

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1250  
Charge press hPa: 1000  
TD travel mm: 2.10...2.90  
mm: (1.80...3.20)

Shutoff

electromagnet Volt: 12

3rd speed 1/min: 850

Charge press hPa: 1000

TD travel mm: 1.00...1.40  
mm: (0.50...1.90)

Shutoff

electromagnet Volt: 12

4th speed 1/min: 750

Charge press hPa: 1000

TD travel mm: 0.30...1.10

Shutoff

electromagnet Volt: 12

8th speed 1/min: 450

Charge press. hPa: -

TD travel mm: 2.00...3.00  
mm: (1.80...3.20)

KSB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 850  
Charge press. hPa: 1000  
Supply-pump pressure bar: 5.50...6.10

Shutoff

electromagnet Volt: 12

2nd speed 1/min: 1100

Charge press. hPa: 1000

Supply-pump pressure bar: 6.90...7.50

Shutoff

electromagnet Volt: 12

3rd speed 1/min: 1250

Charge press. hPa: 1000

Supply-pump pressure bar: 7.50...8.10

Shutoff

electromagnet Volt: 12

4th speed 1/min: 500

Charge press. hPa: 1000

Supply-pump pressure bar: 4.00...4.60

Shutoff

electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500

Charge press. hPa: -

Shutoff

electromagnet Volt: 12

Overflow : 41.70...83.40

quantity cm<sup>3</sup>/10s: (26.70...98.40)

2nd speed 1/min: 1250

Charge press. hPa: 1000

Shutoff

electromagnet Volt: 12

Overflow : 55.60...139.00

quantity cm<sup>3</sup>/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1rd speed 1/min: 700

Charge-air pressure-setting  
point hPa: 300

LDA-stroke mm: 6.7

Shutoff

electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 69.00...70.00

1000S.: (65.50...73.50)

2nd speed 1/min: 1500

Charge press. hPa: 1000

Shutoff

electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 0.00...3.00

1000S.: (0.00...3.00)

3rd speed 1/min: 1440

Charge press. hPa: 1000

Shutoff

electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 15.00...45.00

1000S.: (15.00...45.00)

5th speed 1/min: 1325

Charge press. hPa: 1000

Shutoff

electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 72.00...78.00

1000S.: (69.00...81.00)

9th speed 1/min: 1250

Charge press. hPa: 1000

Shutoff

electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 84.00...89.00

1000S.: (82.50...90.50)

10th speed 1/min: 1100

Charge press. hPa: 1000

Shutoff

electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 85.00...90.00

1000S.: (83.50...91.50)

12th speed 1/min: 850

Charge press. hPa: 1000

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 85.50...86.50  
1000S.: (83.00...89.00)  
18th speed 1/min: 500  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 53.50...54.50  
1000S.: (50.00...58.00)

Mech. shutoff:  
Mech. Abstellung:

1st speed 1/min: 1250  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 400  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: -

Idle delivery:

1st speed 1/min: 400  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 14.50...18.50  
1000S.: (11.50...21.50)

Dispersion cm<sup>3</sup>/: 5.5  
1000S.: (7.0)

2nd speed 1/min: 490  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 130  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 140.00...190.00  
1000S.: (140.00...190.00)

2nd speed 1/min: 240  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 40.00...70.00  
1000S.: (40.00...70.00)

4th speed 1/min: 100  
Shutoff  
electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 115.00...165.00  
1000S.: (115.00...165.00)

Shutoff electromagnet:

Cut-in  
min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
K mm: 3.4...3.6  
KF mm: KOT  
MS mm: 1.0...1.4  
SVS max. mm: -  
LDA stroke mm: 6.7  
Ya mm: 34.8...38.8  
Yb mm: 42.7...47.9

Remarks:  
: C.D.C. # 391 3443  
:



# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CAS  
Edition : 29.06.93  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE4/12F1000R378-10  
Type number : 0 460 424 085  
Customer Part-No. :

Customer-specific information  
Customer : CASE

Engine : 4 T 390

## TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
Pressure bar: 250.00...253.00

Perforated-plate  
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 840

Start of delivery  
Prestroke mm: 0.3  
(from BDC):  $\pm 0.02 (0.04)$

Start of delivery block  
Piston stroke mm: 1.8  
mm:  $\pm 0.02 (0.06)$

Outlet : A

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

F18

Speed 1/min: 900  
Setting value mm: 2.40...2.80  
Shutoff  
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 900  
Setting value bar: 4.00...4.60  
Shutoff  
electromagnet Volt: 24

Full-load del. w/out charge press.:

Speed 1/min: 900  
Del. quantity cm3/  
1000S.: 59.0...70.0

Shutoff  
electromagnet Volt: 24  
Dispersion cm3/: 4.0  
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 450  
Del. quantity cm3/  
1000S.: 7.00...13.00

Shutoff  
electromagnet Volt: 24  
Del. quantity cm3/: 5.5  
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1050  
Del. quantity cm3/  
1000S.: 37.50...43.50

Shutoff  
electromagnet Volt: 24

Start:

Speed 1/min: 100  
Del. quantity cm3/: 80.00...120.00  
mind 1000S.: 80.00  
Shutoff  
electromagnet Volt: 24

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1000  
TD travel mm: 2.70...3.50  
mm: (2.40...3.80)

Shutoff  
electromagnet Volt: 24  
3rd speed 1/min: 900

TD travel mm: 2.40...2.80  
mm: (1.90...3.30)

Shutoff

electromagnet Volt: 24

4th speed 1/min: 750

TD travel mm: 1.30...2.10  
mm: (1.00...2.40)

Shutoff

electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 500

Supply-pump pressure bar: 2.20...2.80

Shutoff

electromagnet Volt: 24

2nd speed 1/min: 900

Supply-pump pressure bar: 4.00...4.60

Shutoff

electromagnet Volt: 24

3rd speed 1/min: 1000

Supply-pump pressure bar: 4.40...5.00

Shutoff

electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 500

Shutoff

electromagnet Volt: 24

Overflow : 41.70...83.40

quantity cm<sup>3</sup>/10s: (26.70...98.40)

2nd speed 1/min: 1000

Shutoff

electromagnet Volt: 24

Overflow : 55.60...139.00

quantity cm<sup>3</sup>/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1130

Shutoff

electromagnet Volt: 24

Del. quantity cm<sup>3</sup>/: 0.00...3.00

1000S.: (0.00...3.00)

3rd speed 1/min: 1070

Shutoff

electromagnet Volt: 24

Del. quantity cm<sup>3</sup>/: 15.00...45.00

1000S.: (15.00...45.00)

5th speed 1/min: 1050

Shutoff

electromagnet Volt: 24

Del. quantity cm<sup>3</sup>/: 37.50...43.50

1000S.: (34.50...46.50)

9th speed 1/min: 1000

Shutoff

electromagnet Volt: 24

Del. quantity cm<sup>3</sup>/: 67.00...70.00

1000S.: (65.50...71.50)

10th speed 1/min: 750

Shutoff

electromagnet Volt: 24

Del. quantity cm<sup>3</sup>/: 72.50...75.50

1000S.: (70.50...77.50)

12th speed 1/min: 900

Shutoff

electromagnet Volt: 24

Del. quantity cm<sup>3</sup>/: 69.00...70.00

1000S.: (66.50...72.50)

20th speed 1/min: 500

Shutoff

electromagnet Volt: 24

Del. quantity cm<sup>3</sup>/: 71.50...79.50

1000S.: (69.50...81.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 450

Del. quantity cm<sup>3</sup>/: 0.00...3.00

1000S.: (0.00...3.00)

Shutoff

electromagnet volt: -

Idle delivery:

1st speed 1/min: 450

Shutoff

electromagnet Volt: 24

Del. quantity cm<sup>3</sup>/: 7.00...13.00

1000S.: (5.00...15.00)

Dispersion cm<sup>3</sup>/: 5.5

1000S.: (7.0)

2nd speed 1/min: 500

Shutoff

electromagnet Volt: 24

Del. quantity cm<sup>3</sup>/: 0.00...4.00

1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 130

Shutoff

electromagnet Volt: 24

Del. quantity cm<sup>3</sup>/: 95.00...135.00

1000S.: (95.00...135.00)

2nd speed 1/min: 240

Shutoff

electromagnet Volt: 24

Del. quantity cm<sup>3</sup>/: 55.00...85.00

1000S.: (55.00...85.00)

4th speed 1/min: 100

Shutoff  
electromagnet Volt: 24  
Del. quantity cm3/: 80.00...120.00  
1000S.: (80.00...120.00)

Shutoff electromagnet:

Cut-in  
min voltage : 20.0  
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: 5.2...5.6
MS	mm: 1.3...1.5
SVS max.	mm: 3.3
Ya	mm: 34.8...38.8
Yb	mm: 38.6...44.2

Remarks:

:  
:

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM  
Edition : 29.06.93  
replaces : 20.10.89  
Calibrating oil : ISO-4113

Injection pump : VE6/12F1325R367-1  
Type number : 0 460 426 146  
Customer Part-No. :

Customer-specific information  
Customer : CDC

Engine : 6 BT 5.9 IND.

Power KW: 97  
Speed 1/min: 2650

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
Pressure bar: 250.00...253.00

Perforated-plate  
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 840

Start of delivery  
Prestroke mm: 0.3  
(from BDC):  $\pm 0.02(0.04)$

Start of delivery block  
Piston stroke mm: 1.5  
mm:  $\pm 0.02(0.06)$

Outlet : D

Injection-pump setting values  
Test specifications in parentheses

## Timing-device travel

Speed 1/min: 850  
Setting value mm: 3.90...4.30  
Shutoff  
electromagnet Volt: 24

## Supply-pump pressure

Speed 1/min: 850  
Setting value bar: 3.90...4.50  
Shutoff  
electromagnet Volt: 24

## Full-load del. w/out charge press.:

Speed 1/min: 1100  
Del. quantity cm<sup>3</sup>/  
1000S.: 56.0...57.0  
Shutoff  
electromagnet Volt: 24  
Dispersion cm<sup>3</sup>/: 4.0  
1000S.: (4.5)

## Low-idle speed regulation

Speed 1/min: 375  
Del. quantity cm<sup>3</sup>/  
1000S.: 8.00...14.00  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 5.5  
1000S.: (7.0)

## Full-load speed regulation

Speed 1/min: 1400  
Del. quantity cm<sup>3</sup>/  
1000S.: 36.00...42.00  
Shutoff  
electromagnet Volt: 24

## Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 60.00...110.00  
mind 1000S.: 60.00  
Shutoff  
electromagnet Volt: 24

## Inspection-pump test specifications Test specifications in parentheses

## Timing-device characteristic:

2nd speed 1/min: 1100  
TD travel mm: 5.90...6.70  
mm: (5.60...7.00)

Shutoff  
 electromagnet Volt: 24  
 3rd speed 1/min: 850  
 TD travel mm: 3.90...4.30  
                     mm: (3.40...4.80)  
  
 Shutoff  
 electromagnet Volt: 24  
 4th speed 1/min: 500  
 TD travel mm: 1.30...2.10  
                     mm: (1.00...2.40)  
  
 Shutoff  
 electromagnet Volt: 24  
  
 Supply-pump pressure characteristic:  
  
 1st speed 1/min: 500  
 Supply-pump  
 pressure bar: 2.50...3.10  
 Shutoff  
 electromagnet Volt: 24  
 2nd speed 1/min: 850  
 Supply-pump  
 pressure bar: 3.90...4.50  
 Shutoff  
 electromagnet Volt: 24  
 3rd speed 1/min: 1100  
 Supply-pump  
 pressure bar: 4.90...5.50  
 Shutoff  
 electromagnet Volt: 24  
  
 Overflow quantity at overflow valve:  
  
 1st speed 1/min: 500  
 Shutoff  
 electromagnet Volt: 24  
 Overflow : 41.70...83.40  
 quantity cm<sup>3</sup>/10s: (26.70...98.40)  
 2nd speed 1/min: 1325  
 Shutoff  
 electromagnet Volt: 24  
 Overflow : 55.60...139.00  
 quantity cm<sup>3</sup>/10s: (40.60...154.00)  
  
 Delivery-quant. and breakaway char.:  
  
 2nd speed 1/min: 1520  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 0.00...3.00  
                     1000S.: (0.00...3.00)  
 3rd speed 1/min: 1440  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 15.00...45.00  
                     1000S.: (15.00...45.00)  
 5th speed 1/min: 1400  
 Shutoff  
 electromagnet Volt: 24

Del. quantity cm<sup>3</sup>/: 36.00...42.00  
                     1000S.: (33.00...45.00)  
 9th speed 1/min: 1325  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 52.50...55.50  
                     1000S.: (51.00...57.00)  
 12th speed 1/min: 1100  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 56.00...57.00  
                     1000S.: (53.50...59.50)  
 15th speed 1/min: 850  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 53.50...57.50  
                     1000S.: (51.50...59.50)  
 20th speed 1/min: 500  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 42.00...50.00  
                     1000S.: (40.00...52.00)  
  
 Mech. shutoff:  
 Mech. Abstimmung:  
  
 1st speed 1/min: 1325  
 Del. quantity cm<sup>3</sup>/: 0.00...3.00  
                     1000S.: (0.00...3.00)  
 Shutoff  
 electromagnet volt: 24  
  
 Electr. shutoff:  
  
 1st speed 1/min: 375  
 Del. quantity cm<sup>3</sup>/: 0.00...3.00  
                     1000S.: (0.00...3.00)  
 Shutoff  
 electromagnet volt: -  
  
 Idle delivery:  
  
 1st speed 1/min: 375  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 8.00...14.00  
                     1000S.: (6.00...16.00)  
 Dispersion cm<sup>3</sup>/: 5.5  
                     1000S.: (7.0)  
 2nd speed 1/min: 455  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 0.00...4.00  
                     1000S.: (0.00...4.00)  
  
 Automatic starting fuel delivery:  
  
 1st speed 1/min: 130  
 Shutoff  
 electromagnet Volt: 24

Del. quantity cm3/: 65.00...115.00  
1000S.: (65.00...115.00)

2nd speed 1/min: 250

Shutoff

electromagnet Volt: 24

Del. quantity cm3/: 15.00...65.00  
1000S.: (15.00...65.00)

4th speed 1/min: 100

Shutoff

electromagnet Volt: 24

Del. quantity cm3/: 60.00...110.00  
1000S.: (60.00...110.00)

Shutoff electromagnet:

Cut-in

min voltage : 20.0

Rated voltage : 24.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: 5.0...5.4
MS	mm: 1.3...1.7
SVS max.	mm: 1.3
Ya	mm: 34.8...38.8
Yb	mm: 37.6...43.4

Remarks:

: C.D.C. # 391 6904  
:

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM  
Edition : 14.04.92  
replaces : 29.06.93  
Calibrating oil : ISO-4113  
  
Injection pump : VE6/12F1100R402  
Type number : 0 460 426 166  
Customer Part-No. :

Customer-specific information  
Customer : CDC

Engine : 6 BTA- 590 I

## TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
Pressure bar: 250.00...253.00

Perforated-plate  
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 840

Start of delivery  
Prestroke mm: 0.3  
(from BDC):  $\pm 0.02(0.04)$

Start of delivery block  
Piston stroke mm: 1.5  
mm:  $\pm 0.02(0.06)$

Outlet : D

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

F24

Speed 1/min: 900  
Charge press. hPa: 1000  
Setting value mm: 4.80...5.20  
Shutoff  
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 900  
Charge press hPa: 1000  
Setting value bar: 4.70...5.30  
Shutoff  
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 750  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000S.: 71.50...72.50  
Shutoff  
electromagnet Volt: 24  
Dispersion cm<sup>3</sup>/: 4.0  
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 700  
Del. quantity cm<sup>3</sup>/  
1000S.: 51.00...52.00  
Shutoff  
electromagnet Volt: 24

Low-idle speed regulation

Speed 1/min: 400  
Del. quantity cm<sup>3</sup>/  
1000S.: 7.00...13.00  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 5.5  
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1180  
Charge press hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000S.: 47.00...53.00  
Shutoff  
electromagnet Volt: 24

Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 65.00...115.00  
mind 1000S.: 65.00  
Shutoff  
electromagnet Volt: 24

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100  
Charge press hPa: 1000  
TD travel mm: 6.20...7.00  
mm: (5.90...7.30)

Shutoff  
electromagnet Volt: 24  
3rd speed 1/min: 900  
Charge press hPa: 1000  
TD travel mm: 4.80...5.20  
mm: (4.30...5.70)

Shutoff  
electromagnet Volt: 24  
4th speed 1/min: 750  
Charge press hPa: 1000  
TD travel mm: 3.50...4.30  
mm: (3.20...4.60)

Shutoff  
electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 750  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 4.00...4.60

Shutoff  
electromagnet Volt: 24  
2nd speed 1/min: 900  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 4.70...5.30

Shutoff  
electromagnet Volt: 24  
3rd speed 1/min: 1100  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 5.50...6.10

Shutoff  
electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 750  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 24  
Overflow : 41.70...83.40  
quantity cm<sup>3</sup>/10s: (26.70...98.40)

2nd speed 1/min: 1100  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Overflow : 55.60...139.00  
quantity cm<sup>3</sup>/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700  
Charge-air pressure-setting  
point hPa: 350  
LDA-stroke mm: 5.0  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 64.50...65.50  
1000s.: (61.00...69.00)

2nd speed 1/min: 1250  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000s.: (0.00...3.00)

3rd speed 1/min: 1200  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 15.00...45.00  
1000s.: (15.00...45.00)

5th speed 1/min: 1180  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 47.00...53.00  
1000s.: (44.00...56.00)

9th speed 1/min: 1100  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 59.50...62.50  
1000s.: (58.00...64.00)

10th speed 1/min: 900  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 61.50...64.50  
1000s.: (59.50...66.50)

12th speed 1/min: 750  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 71.50...72.50  
1000s.: (69.00...75.00)

18th speed 1/min: 700  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 51.00...52.00  
1000s.: (47.50...55.50)

Mech. shutoff:  
Mech. Abstellung:

1st speed 1/min: 1100  
Charge press. hPa: 1000



Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 400  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: -

Idle delivery:

1st speed 1/min: 400  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 7.00...13.00  
1000S.: (5.00...15.00)

Dispersion cm<sup>3</sup>/: 5.5  
1000S.: (7.0)

2nd speed 1/min: 500  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 0.00...4.00  
1000S.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 250  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 70.00...120.00  
1000S.: (70.00...120.00)

2nd speed 1/min: 450  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 10.00...50.00  
1000S.: (10.00...50.00)

4th speed 1/min: 100  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 65.00...115.00  
1000S.: (65.00...115.00)

Shutoff electromagnet:

Cut-in  
min voltage : 20.0  
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation

K mm: -  
KF mm: 5.0...5.4

F26

MS mm: 1.3...1.7  
LDA stroke mm: 5.0  
Ya mm: 34.8...38.8  
Yb mm: 40.2...45.8

Remarks:

: CDC # 391 7562

:  
Operate control lever after each  
manifold-pressure compensator pressure  
change.

\* Correction at adjusting nut

Heavy-duty fuel-injection pump for  
DI-engines: only test using timing-  
device-travel measuring device with  
metal jacket

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CDC  
Edition : 29.06.93  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE6/12F1250R498-1  
Type number : 0 460 426 212  
Customer Part-No. :

Customer-specific information  
Customer : CDC

Engine : 6 BTAA 5.9B

Power KW: 100  
Speed 1/min: 1250

## TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 109

Opening  
Pressure bar: 207.00...210.00

Perforated-plate  
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 840

Start of delivery  
Prestroke mm: -  
(from BDC): -

Start of delivery block  
Piston stroke mm: 1.15  
mm:  $\pm 0.02(0.06)$

Outlet : D

Injection-pump setting values

F27

Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000  
Charge press. hPa: 1000  
Setting value mm: 1.50...1.90  
Shutoff  
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1000  
Charge press hPa: 1000  
Setting value bar: 6.30...6.90  
Shutoff  
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 850  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000S.: 71.50...72.50

Shutoff  
electromagnet Volt: 24  
Dispersion cm<sup>3</sup>/: 5.0  
1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 500  
Del. quantity cm<sup>3</sup>/  
1000S.: 59.50...60.50

Shutoff  
electromagnet Volt: 24  
Dispersion cm<sup>3</sup>/: 5.0  
1000S.: (6.0)

Low-idle speed regulation

Speed 1/min: 350  
Del. quantity cm<sup>3</sup>/  
1000S.: 11.00...15.00

Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 5.5  
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1400  
Charge press hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000S.: 42.00...48.00

Shutoff  
electromagnet Volt: 24

Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 100.00...160.00  
mind 1000s.: 100.0  
Shutoff  
electromagnet Volt: 24

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1250  
Charge press hPa: 1000  
TD travel mm: 2.10...2.90  
mm: (1.80...3.20)

Shutoff  
electromagnet Volt: 24  
3rd speed 1/min: 1000  
Charge press hPa: 1000  
TD travel mm: 1.50...1.90  
mm: (1.00...2.40)

Shutoff  
electromagnet Volt: 24  
7. Rotacao 1/min: 850  
Charge press. hPa: 1000  
TD travel mm: 0.50...1.30  
mm: (0.20...1.60)

Shutoff  
electromagnet Volt: 24  
8th speed 1/min: 450  
Charge press. hPa: -  
TD travel mm: 2.00...3.00  
mm: (1.80...3.20)

KSB/AFB  
valve Volt: 24  
Shutoff  
electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 850  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 5.70...6.30  
Shutoff  
electromagnet Volt: 24  
2nd speed 1/min: 1000  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 6.30...6.90  
Shutoff  
electromagnet Volt: 24  
3rd speed 1/min: 1250  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 7.20...7.80  
Shutoff  
electromagnet Volt: 24  
4th speed 1/min: 500  
Charge press. hPa: 1000

Supply-pump  
pressure bar: 3.90...4.50  
Shutoff  
electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 24  
Overflow : 41.70...83.40  
quantity cm<sup>3</sup>/10s: (26.70...98.40)  
2nd speed 1/min: 1250  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Overflow : 55.60...139.00  
quantity cm<sup>3</sup>/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 600  
Charge-air pressure-setting  
point hPa: 450  
LDA-stroke mm: 4.0  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 68.00...69.00  
1000s.: (64.50...72.50)  
2nd speed 1/min: 1490  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000s.: (0.00...3.00)  
3rd speed 1/min: 1445  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 15.00...45.00  
1000s.: (15.00...45.00)  
5th speed 1/min: 1400  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 42.00...48.00  
1000s.: (39.00...51.00)  
9th speed 1/min: 1250  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 73.00...77.00  
1000s.: (72.00...78.00)  
10th speed 1/min: 1100  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24

Del. quantity cm3/: 72.50...75.50  
1000S.: (70.50...77.50)  
12th speed 1/min: 850  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm3/: 71.50...72.50  
1000S.: (69.00...75.00)  
18th speed 1/min: 500  
Charge press. hPa: -  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm3/: 59.50...60.50  
1000S.: (56.00...64.00)

Mech. shutoff:  
Mech. Abststellung:

1st speed 1/min: 1250  
Charge press. hPa: 1000  
Del. quantity cm3/: 0.00...3.00  
1000S.: (0.00...3.00)  
Shutoff  
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 350  
Charge press. hPa: -  
Del. quantity cm3/: 0.00...3.00  
1000S.: (0.00...3.00)  
Shutoff  
electromagnet volt: -

Idle delivery:

1st speed 1/min: 350  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm3/: 11.00...15.00  
1000S.: (8.00...18.00)  
Dispersion cm3/: 5.5  
1000S.: (7.0)  
2nd speed 1/min: 400  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm3/: 0.00...3.00  
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 130  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm3/: 105.00...165.00  
1000S.: (105.00...165.00)

2nd speed 1/min: 200  
Shutoff  
electromagnet Volt: 24

Del. quantity cm3/: 55.00...85.00  
1000S.: (55.00...85.00)  
4th speed 1/min: 100  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm3/: 100.00...160.00  
1000S.: (100.00...160.00)

Shutoff electromagnet:

Cut-in  
min voltage : 20.0  
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation  
K mm: 3.6...3.8  
KF mm: KOT  
MS mm: -  
SVS max. mm: 3.7  
LDA stroke mm: 4.0  
Ya mm: 34.8...38.8  
Yb mm: 44.9...50.1

Remarks:

: CDC # 328 1848  
:

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CDC  
Edition : 29.06.93  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE6/12F1250R373-7  
Type number : 0 460 426 216  
Customer Part-No. :

Customer-specific information  
Customer : CDC

Engine : 6 BTA-590

## TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
Pressure bar: 250.00...253.00

Perforated-plate  
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 840

Start of delivery  
Prestroke mm: 0.3  
(from BDC):  $\pm 0.02(0.04)$

Start of delivery block  
Piston stroke mm: 1.85  
mm:  $\pm 0.02(0.06)$

Outlet : D

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

G02

Speed 1/min: 750  
Charge press. hPa: 1000  
Setting value mm: 1.30...1.70

Supply-pump pressure

Speed 1/min: 750  
Charge press hPa: 1000  
Setting value bar: 3.20...3.80

Full-load del. with charge press.:

Speed 1/min: 750  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000S.: 84.50...85.50  
Dispersion cm<sup>3</sup>/: 4.0  
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500  
Del. quantity cm<sup>3</sup>/  
1000S.: 68.50...69.50

Low-idle speed regulation

Speed 1/min: 375  
Del. quantity cm<sup>3</sup>/  
1000S.: 8.00...14.00  
Del. quantity cm<sup>3</sup>/: 5.5  
1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1300  
Charge press hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000S.: 59.00...65.00

Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 60.00...120.00  
mind 1000S.: 60.00

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1050  
Charge press hPa: 1000  
TD travel mm: 2.20...3.00  
mm: (1.90...3.30)

3rd speed 1/min: 750  
Charge press hPa: 1000  
TD travel mm: 1.30...1.70  
mm: (0.80...2.20)

4th speed 1/min: 600  
Charge press hPa: 1000  
TD travel mm: 0.40...1.20  
mm: (0.10...1.50)

#### Supply-pump pressure characteristic:

1st speed 1/min: 500  
Charge press. hPa: 1000  
Supply-pump pressure bar: 2.20...2.80  
2nd speed 1/min: 750  
Charge press. hPa: 1000  
Supply-pump pressure bar: 3.20...3.80  
3rd speed 1/min: 1050  
Charge press. hPa: 1000  
Supply-pump pressure bar: 4.50...5.10

#### Overflow quantity at overflow valve:

1st speed 1/min: 500  
Overflow : 41.70...83.40  
quantity cm<sup>3</sup>/10s: (26.70...98.40)  
2nd speed 1/min: 1250  
Charge press. hPa: 1000  
Overflow : 55.60...139.00  
quantity cm<sup>3</sup>/10s: (40.60...154.00)

#### Delivery-quant. and breakaway char.:

1st speed 1/min: 700  
Charge-air pressure-setting point hPa: 400  
LDA-stroke mm: 5.0  
Del. quantity cm<sup>3</sup>/: 77.50...78.50  
1000S.: (74.00...82.00)  
2nd speed 1/min: 1400  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)  
Del. quantity cm<sup>3</sup>/: 0.00...15.00  
1000S.: (0.00...15.00)  
4th speed 1/min: 1330  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 15.00...55.00  
1000S.: (15.00...55.00)  
5th speed 1/min: 1300  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 59.00...65.00  
1000S.: (56.00...68.00)  
9th speed 1/min: 1250  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 76.50...79.50  
1000S.: (75.00...81.00)  
10th speed 1/min: 1050  
Charge press. hPa: 1000

Del. quantity cm<sup>3</sup>/: 80.00...83.00  
1000S.: (78.00...85.00)  
12th speed 1/min: 750  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 84.50...85.50  
1000S.: (82.00...88.00)  
18th speed 1/min: 500  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/: 68.50...69.50  
1000S.: (65.00...73.00)  
20th speed 1/min: 500  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 83.00...91.00  
1000S.: -

Mech. shutoff:  
Mech. Abst.ung:

1st speed 1/min: 1250  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

#### Idle delivery:

1st speed 1/min: 375  
Del. quantity cm<sup>3</sup>/: 8-14 (6-16)  
1000S.: SCHRAUBE 12 MM  
Dispersion cm<sup>3</sup>/: 5.5  
1000S.: (7.0)  
2nd speed 1/min: 500  
Del. quantity cm<sup>3</sup>/: 0.00...4.00  
1000S.: (0.00...4.00)  
5th speed 1/min: 125  
Del. quantity cm<sup>3</sup>/: 0.00...5.00  
1000S.: SCHRAUBE 3.0 MM

#### Automatic starting fuel delivery:

1st speed 1/min: 250  
Del. quantity cm<sup>3</sup>/: 85.00...135.00  
1000S.: (85.00...135.00)  
2nd speed 1/min: 450  
Del. quantity cm<sup>3</sup>/: 48.00...88.00  
1000S.: (48.00...88.00)  
4th speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 60.00...120.00  
1000S.: (60.00...120.00)

#### Mounting and assembly dimensions:

Designation  
K mm: -  
KF mm: 5.2...5.6  
MS mm: -  
LDA stroke mm: 5.0  
Ya mm: 37.0...41.0  
Yb mm: 43.7...48.9

Remarks:

: CDC # 392 4062  
:

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CDC  
Copl. date: : FD 361  
Edition : 29.06.93  
replaces : -  
Calibrating oil : ISO-4113

Injection pump : VE6/12F1100R512  
Type number : 0 460 426 217  
Customer Part-No. :  
Customer Part-No. :

Customer-specific information  
Customer : CASE

Engine : 6 T 590

## TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
Pressure bar: 250.00...253.00

Perforated-plate  
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 840

Start of delivery  
Prestroke mm: 0.2  
(from BDC):  $\pm 0.02(0.04)$

Start of delivery block  
Piston stroke mm: 1.5  
mm:  $\pm 0.02(0.06)$

Outlet : D

Injection-pump setting values  
Test specifications in parentheses

## Timing-device travel

Speed 1/min: 900  
Charge press. hPa: 1000  
Setting value mm: 2.40...2.80  
Shutoff  
electromagnet Volt: 12

## Supply-pump pressure

Speed 1/min: 900  
Charge press hPa: 1000  
Setting value bar: 5.70...6.30  
Shutoff  
electromagnet volt: 12

## Full-load del. with charge press.:

Speed 1/min: 700  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000s.: 76.50...77.50  
Shutoff  
electromagnet Volt: 12  
Dispersion cm<sup>3</sup>/: 4.0  
1000s.: (4.5)

## Full-load del. w/out charge press.:

Speed 1/min: 500  
Del. quantity cm<sup>3</sup>/  
1000s.: 49.00...50.00  
Shutoff  
electromagnet Volt: 12

## Low-idle speed regulation

Speed 1/min: 400  
Del. quantity cm<sup>3</sup>/  
1000s.: 6.00...12.00  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 5.5  
1000s.: (7.0)

## Full-load speed regulation

Speed 1/min: 1180  
Charge press hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000s.: 38.00...42.00  
Shutoff  
electromagnet Volt: 12

## Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 50.00...80.00  
mind 1000s.: 50.00



Shutoff  
electromagnet Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100  
Charge press hPa: 1000  
TD travel mm: 3.70...4.50  
mm: (3.40...4.80)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 900  
Charge press hPa: 1000  
TD travel mm: 2.40...2.80  
mm: (1.90...3.30)

Shutoff  
electromagnet Volt: 12  
4th speed 1/min: 700  
Charge press hPa: 1000  
TD travel mm: 0.80...1.60  
mm: (0.50...1.90)

Shutoff  
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 3.80...4.40

Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 900  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 5.70...6.30

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1100  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 6.50...7.10

Shutoff  
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12  
Overflow : 41.70...83.40  
quantity cm3/10s: (26.70...98.40)

2nd speed 1/min: 1100  
Charge press. hPa: 1000  
Shutoff  
electromagnet Volt: 12

Overflow : 55.60...139.00  
quantity cm3/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700  
Charge-air pressure-setting  
point hPa: 350  
LDA-stroke mm: 5.9

Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 68.00...69.00  
1000s.: (64.50...72.50)

2nd speed 1/min: 1260  
Charge press. hPa: 1000  
Shutoff

electromagnet Volt: 12  
Del. quantity cm3/: 0.00...3.00  
1000s.: (0.00...3.00)

3rd speed 1/min: 1200  
Charge press. hPa: 1000  
Shutoff

electromagnet Volt: 12  
Del. quantity cm3/: 15.00...35.00  
1000s.: (15.00...35.00)

4th speed 1/min: 1230  
Charge press. hPa: 1000  
Shutoff

electromagnet Volt: 12  
Del. quantity cm3/: 5.00...35.00  
1000s.: --

5th speed 1/min: 1180  
Charge press. hPa: 1000  
Shutoff

electromagnet Volt: 12  
Del. quantity cm3/: 38.00...42.00  
1000s.: (34.00...46.00)

9th speed 1/min: 1100  
Charge press. hPa: 1000  
Shutoff

electromagnet Volt: 12  
Del. quantity cm3/: 66.00...69.00  
1000s.: (64.50...70.50)

12th speed 1/min: 700  
Charge press. hPa: 1000  
Shutoff

electromagnet Volt: 12  
Del. quantity cm3/: 76.50...77.50  
1000s.: (74.00...80.00)

18th speed 1/min: 500  
Charge press. hPa: --  
Shutoff

electromagnet Volt: 12  
Del. quantity cm3/: 49.00...50.00  
1000s.: (46.00...53.00)

20th speed 1/min: 500  
Charge press. hPa: 1000  
Shutoff

electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 72.00...78.00  
1000S.: (70.00...80.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 400  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: -

Idle delivery:

1st speed 1/min: 400  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 6.00...12.00  
1000S.: (4.00...14.00)

Dispersion cm<sup>3</sup>/: 5.5  
1000S.: (7.0)

5th speed 1/min: 375  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 11.00...19.00  
1000S.: (9.00...21.00)

Automatic starting fuel delivery:

1st speed 1/min: 180  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 70.00...100.00  
1000S.: (70.00...100.00)

2nd speed 1/min: 350  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 65.00...85.00  
1000S.: (65.00...85.00)

4th speed 1/min: 100  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 50.00...80.00  
1000S.: (50.00...80.00)

Shutoff electromagnet:

Cut-in  
min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: -  
KF mm: 5.2...5.6  
MS mm: 1.0...1.4

SVS max. mm: 6.0  
LDA stroke mm: 5.9  
Ya mm: 34.8...38.8  
Yb mm: 35.9...41.1

Remarks:

: CDC # 392 4983  
:

G07

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN  
Edition : 23.07.93  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 400 849 203  
Injection pump  
Pump designation : PE10A95D520/5LS2501  
EP type number : 0 410 699 997  
Governor  
Governor design. : RQ500AB985R  
Governor no. : 0 420 201 618

Customer-spec. information  
Customer : MAN

Engine : D2530MTE

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.70...1.80  
: (1.65...1.85)

Rack travel in mm : 9.00...12.00

Firing order : 10- 9- 4- 1- 8- 7-  
6- 3- 5- 2

Phasing : 0-45-72-117-144-189-  
216-261-288-333  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 10.70...10.80

Del.quantity cm3/ : 10.2...10.4

100 s: (10.0...10.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : ?

Rack travel in mm : ?

Del.quantity cm3/ : ?

100 s: (?)

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Del.quantity : 102.5...104.5

1000 : (100.5...106.5)

Spread cm3 : 3.00

1000 : (6.00)

## RATED SPEED

1st version

Control Lever

position degrees: 29...37

Testing:

1st rack travel in: 10.40

Speed rpm : 895...950

2nd rack travel in: 4.50

Speed rpm : 930...940

## BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.40

Speed rpm : 895...905

## HIGH IDLE

1st version

Speed rpm : 936  
Rack travel in mm : 4.50...4.80

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.20...5.40  
Del.quantity cm<sup>3</sup>/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:  
: MAN-NR. 2-7779

#### APPLICATION

Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM  
Edition : 02.07.93  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 400 866 195  
Injection pump  
Pump designation : PES6A100D320/3RS2763  
EP type number : 0 410 806 006  
Governor  
Governor design. : RSV375...1000A0C2190  
-70R  
Governor no. : 0 420 233 309

Customer-spec. information  
Customer : C.D.C.

Engine : 6 CTA

1st version kW : 166.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.90...13.00

Del.quantity cm3/ : 13.3...13.5

100 s: (13.1...13.7)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 375.0

Rack travel in mm : 5.3...5.5

Del.quantity cm3/ : 1.7...2.1

100 s: (1.4...2.3)

Spread cm3 : 0.6

100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 133.5...135.5

1000 : (131.5...137.5)

Spread cm3 : 4.00

1000 : (6.50)

## RATED SPEED

1st version

Control lever

position degrees: 37...45

Testing:

1st rack travel in: 11.90  
Speed rpm : 1050...1060  
2nd rack travel in: 4.00  
Speed rpm : 1125...1135  
3rd rack travel in: 4.00  
Speed rpm : 1120...1150  
4th rack travel in: 1200  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 15...23  
Setting point w/out bumper spring  
Speed rpm : 375  
Rack travel in mm : 4.9

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 375  
Rack travel in mm : 5.30...5.50

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 12.90...13.00  
2nd speed rpm : 750  
Rack travel in m: 13.60...13.80

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del. quantity cm<sup>3</sup>/ : 146.0...150.0  
1000 s: (144.0...152.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 11.90  
Speed rpm : 1050...1060

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 145.0...165.0  
1000 s: (140.0...170.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 375  
Rack travel in mm : 5.30...5.50  
Del. quantity cm<sup>3</sup>/ : 17.0...21.0  
1000 s: (14.5...23.5)

Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: C.D.C. # 3921117

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark at 10° cam  
rotation angle after start of delivery,  
cylinder 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM  
Edition : 15.06.93  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 400 866 215  
Injection pump  
Pump designation : PES6A100D320/3RS2691  
EP type number : 9 410 230 025  
Governor  
Governor design. : RSV400...1050ADC2190  
-85R  
Governor no. : 0 420 233 324

Customer-spec. information  
Customer : C.D.C

Engine : 6 CT 8.3

1st version kW : 154.4  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.40...12.50

Del.quantity cm<sup>3</sup>/ : 12.5...12.7

100 s: (12.3...12.9)

Spread cm<sup>3</sup> : 0.4

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.8...6.0

Del.quantity cm<sup>3</sup>/ : 1.5...1.9

100 s: (1.3...2.2)

Spread cm<sup>3</sup> : 0.6

100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 125.5...127.5

1000 : (123.5...129.5)

Spread cm<sup>3</sup> : 4.00

1000 : (6.50)

## RATED SPEED

1st version

Control lever

position degrees: 38...46

Testing:

1st rack travel in: 11.40  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1140...1150  
3rd rack travel in: 4.00  
Speed rpm : 1135...1165  
4th rack travel in: 1275  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.4

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.80...6.00

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.40  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 145.0...165.0  
1000 s: (140.0...170.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Del.quantity cm3/ : 15.5...19.5  
1000 s: (13.0...22.0)  
Spread cm3 : 6.00  
1000 s: (8.00)

#### Remarks:

: C.D.C. # 3921141

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark at 10° cam  
rotation angle after start of delivery,  
cylinder 1



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM  
Edition : 15.06.93  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 400 866 216

Injection pump  
Pump designation : PES6A100D320/3RS2691  
EP type number : 9 410 230 025  
Governor  
Governor design. : RSV400...1050A0C2216  
-8R  
Governor no. : 0 420 233 333

Customer-spec. information  
Customer : C.D.C.

Engine : 6 CT 8.3 ltr

1st version kW : 131.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.30...11.40

Del.quantity cm3/ : 10.6...10.8

100 s: (10.4...11.0)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.5...5.7

Del.quantity cm3/ : 1.4...1.8

100 s: (1.1...2.0)

Spread cm3 : 0.6

100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 106.0...108.0

1000 : (104.0...110.0)

Spread cm3 : 4.00

1000 : (6.50)

## RATED SPEED

1st version

Control lever

position degrees: 44...52

Testing:

1st rack travel in: 10.30  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1150...1160  
3rd rack travel in: 4.00  
Speed rpm : 1140...1170  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 24...32  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.1

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.50...5.70

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 11.30...11.40  
2nd speed rpm : 750  
Rack travel in m: 12.30...12.50

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del. quantity cm<sup>3</sup>/ : 120.0...124.0  
1000 s: (118.0...126.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.30  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.50...5.70  
Del. quantity cm<sup>3</sup>/ : 14.0...18.0  
1000 s: (11.5...20.5)

Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: C.D.C. # 3921106

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE  
Edition : 21.04.93  
Replaces : 02.93  
Test oil : ISO-4113

Combination no. : 0 400 876 381

Injection pump  
Pump designation : PES6A100D410RS2762-1  
EP type number : 0 410 806 008  
Governor  
Governor design. : RSV425...1050A0C2252  
-1L  
Governor no. : 0 420 232 571

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6076TRW-30

1st version kW : 131.5  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05  
: (2.90...3.10)  
Rack travel in mm : 10.50...10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

---

Rack travel in mm : 11.30...11.40

---

Del.quantity cm3/ : 10.9...11.1  
100 s: (10.5...11.1)

---

Spread cm3 : 0.4  
100 s: (0.6)

---

2nd speed rpm : 425.0  
Rack travel in mm : 5.5...5.7  
Del.quantity cm3/ : 2.1...2.5  
100 s: (1.9...2.7)

---

Spread cm3 : 0.6  
100 s: (0.8)

---

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : 5.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1050  
Del.quantity : 109.0...111.0  
1000 : (105.0...111.0)

---

Spread cm3 : 4.00  
1000 : (6.50)

---

## RATED SPEED

1st version  
Control lever  
position degrees: 42...50

Testing:

1st rack travel in: 10.30  
Speed rpm : 1095...1105  
2nd rack travel in: 4.00  
Speed rpm : 1165...1175  
3rd rack travel in: 4.00  
Speed rpm : 1155...1185  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 20...28  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 5.1

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 425  
Rack travel in mm : 5.50...5.70

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 11.30...11.40  
2nd speed rpm : 750  
Rack travel in m: 13.10...13.30

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 134.5...138.5  
1000 s: (132.5...140.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.30  
Speed rpm : 1095...1105

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 100.0...120.0  
1000 s: (95.0...125.0)

#### LOW IDLE

Speed rpm : 425  
Rack travel in mm : 5.50...5.70  
Del.quantity cm<sup>3</sup>/ : 21.5...25.5  
1000 s: (19.5...27.5)

Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: JOHN DEERE # RE41833  
Start-of-delivery mark = 13,5° after  
start of delivery cyl. 1.

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

#### APPLICATION

Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE  
Edition : 21.04.93  
Replaces : 02.93  
Test oil : ISO-4113

Combination no. : 0 400 876 411

Injection pump  
Pump designation : PES6A100D410RS2762-1  
EP type number : 0 410 806 008  
Governor  
Governor design. : RSV425...1100A0C2252  
-2L  
Governor no. : 0 420 232 591

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6075ADW-30

1st version kW : 135.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05  
: (2.90...3.10)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.10...11.20

Del.quantity cm<sup>3</sup>/ : 10.4...10.6

100 s: (10.2...10.8)

Spread cm<sup>3</sup> : 0.4

100 s: (0.6)

2nd speed rpm : 425.0  
Rack travel in mm : 6.0...6.2  
Del.quantity cm<sup>3</sup>/ : 3.1...3.5  
100 s: (2.9...3.7)  
Spread cm<sup>3</sup> : 0.6  
100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3

Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Del.quantity : 104.5...106.5  
1000 : (102.5...108.5)  
Spread cm<sup>3</sup> : 4.00  
1000 : (6.50)

## RATED SPEED

1st version  
Control Lever  
position degrees: 45...53

Testing:

1st rack travel in: 10.10  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1205...1215  
3rd rack travel in: 4.00  
Speed rpm : 1195...1225  
4th rack travel in: 1350  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 5.6

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 425  
Rack travel in mm : 6.00...6.20

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.10...11.20  
2nd speed rpm : 700  
Rack travel in m: 13.50...13.70

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 141.0...145.0  
1000 s: (139.0...147.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.10  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 100.0...120.0  
1000 s: (95.0...125.0)

#### LOW IDLE

Speed rpm : 425  
Rack travel in mm : 6.00...6.20  
Del.quantity cm<sup>3</sup>/ : 31.0...35.0  
1000 s: (29.0...37.0)

Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: JOHN DEERE # RE55529  
Start-of-delivery mark = 13,5° after  
start of delivery cyl. 1.

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE  
Edition : 02.07.93  
Replaces : 02.93  
Test oil : ISO-4113  
  
Combination no. : 0 400 876 416  
  
Injection pump  
Pump designation : PES6A100D410RS2762-1  
EP type number : 0 410 806 008  
Governor  
Governor design. : RSV400...1100A2C2229  
-1L  
Governor no. : 0 420 232 594

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6076 TF 030

1st version kW : 142.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 27...29

G20

Prestroke mm : 2.95...3.05  
: (2.90...3.10)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.00...12.10

Del.quantity cm<sup>3</sup>/ : 12.0...12.2

100 s: (11.8...12.4)

Spread cm<sup>3</sup> : 0.4

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.2...5.4

Del.quantity cm<sup>3</sup>/ : 1.9...2.3

100 s: (1.6...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 120.0...122.0

1000 : (118.0...124.0)

Spread cm<sup>3</sup> : 4.00

1000 : (6.50)

## RATED SPEED

1st version

Control lever

position degrees: 43...51

Testing:

1st rack travel in: 11.00  
Speed rpm : 1145...1155  
2nd rack travel in: 4.00  
Speed rpm : 1205...1215  
3rd rack travel in: 4.00  
Speed rpm : 1195...1225  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control Lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 4.8

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.20...5.40  
Rack travel in mm : 2.00  
Speed rpm : 550...610

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 12.00...12.10  
2nd speed rpm : 700  
Rack travel in m: 13.90...14.10

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 151.0...154.0  
1000 s: (148.5...156.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 11.00  
Speed rpm : 1145...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 100.0...120.0  
1000 s: (95.0...125.0)

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.20...5.40

Del.quantity cm<sup>3</sup>/ : 19.0...23.0  
1000 s: (16.5...25.5)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: JOHN DEERE # RE48640  
Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Start-of-delivery mark = 13,5° after  
start of delivery cyl. 1.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE  
 Edition : 15.06.93  
 Replaces : 03.93  
 Test oil : ISO-4113  
 Combination no. : 0 400 876 417  
 Injection pump  
 Pump designation : PES6A100D410RS2762-1  
 EP type number : 0 410 806 008  
 Governor  
 Governor design. : RSV425...1100AOC2252  
 -4L  
 Governor no. : 0 420 232 595

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6076ARW-32

1st version kW : 145.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 27...29

G22

Prestroke mm : 2.95...3.05  
 : (2.90...3.10)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100  
 Rack travel in mm : 11.90...12.00  
 Del.quantity cm<sup>3</sup>/ : 11.4...11.6  
 100 s: (11.2...11.8)

Spread cm<sup>3</sup> : 0.4  
 100 s: (0.6)

2nd speed rpm : 425.0  
 Rack travel in mm : 5.7...5.9  
 Del.quantity cm<sup>3</sup>/ : 2.6...3.0  
 100 s: (2.3...3.2)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 3.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Del.quantity : 114.0...116.0  
 1000 : (112.0...118.0)  
 Spread cm<sup>3</sup> : 4.00  
 1000 : (6.50)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 43...51

Testing:

1st rack travel in: 10.90  
Speed rpm : 1145...1155  
2nd rack travel in: 4.00  
Speed rpm : 1205...1215  
3rd rack travel in: 4.00  
Speed rpm : 1195...1225  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 20...28  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 5.3

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 425  
Rack travel in mm : 5.70...5.90

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.90...12.00  
2nd speed rpm : 750  
Rack travel in m: 13.90...14.10

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 143.5...147.5  
1000 s: (141.5...149.5)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.90  
Speed rpm : 1145...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 100.0...120.0  
1000 s: (95.0...125.0)

#### LOW IDLE

Speed rpm : 425  
Rack travel in mm : 5.70...5.90  
Del.quantity cm<sup>3</sup>/ : 26.0...30.0  
1000 s: (23.5...32.5)

Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: JOHN DEERE # RE55711  
Start-of-delivery mark = 13,5° after  
start of delivery cyl. 1.

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL  
Edition : 20.12.91  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 401 846 505E

Injection pump  
Pump designation : PE6P110A320RS483  
EP type number : 0 411 816 159  
Governor  
Governor design. : RQV250...1100PA918E  
Governor no. : 0 421 813 772

Customer spec. information  
Customer : VOLVO-TRUCK

Engine : TD71

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
: (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.20...11.30

Del. quantity cm<sup>3</sup>/ : 10.1...10.3

100 s: (9.8...10.6)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 5.3...5.5

Del. quantity cm<sup>3</sup>/ : 1.6...2.0

100 s: (1.3...2.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.10...1.30

2nd speed rpm : 380

travel mm : 2.30...2.60

3rd speed rpm : 500

travel mm : 2.90...3.30

4th speed rpm : 1260

travel mm : 7.70...7.90

5th speed rpm : 1400

travel mm : 9.00...9.30

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1330

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 700

Aneroid pressure h: 900

Del. quantity : 101.0...103.0

1000 : (98.0...106.0)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 104...112

Testing:  
1st rack travel in: 10.20  
Speed rpm : 1160...1170  
2nd rack travel in: 4.00  
Speed rpm : 1260...1290  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 56...64

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.80  
Speed rpm : 250  
Rack travel in mm : 5.30...5.50

CONSTANT REGULATION  
Speed rpm : 250...450

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 11.20...11.30

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.70...8.90  
2nd pressure hPa : 560  
Rack travel in m: 11.00...11.10  
3rd pressure hPa : 290  
Rack travel in m: 9.10...9.30

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 68.0...70.0  
1000 s: (65.0...73.0)

#### BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 10.20  
Speed rpm : 1160...1170

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 170.0...200.0  
1000 s: (166.0...204.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.30...5.50  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.0...23.0)  
Spread cm<sup>3</sup> : 3.00  
1000 s: (6.00)

#### Remarks:

:  
Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 11,7 m  
Edition : 23.10.92  
Replaces : 02.92  
Test oil : ISO-4113

Combination no. : 0 401 846 566

Injection pump  
Pump designation : PE6P110A320RS526  
EP type number : 0 411 816 178  
Governor  
Governor design. : RQ275/1000PA818-3  
Governor no. : 0 421 801 534

Customer spec. information  
Customer : DAF

Engine : LT 160 G

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)

Rack travel in mm : 14.00...15.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10  
& maximum rack tra: 13.0...14.0  
Difference ° CS : 2.00...4.00

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.20...14.30

Del. quantity cm3/ : 15.6...15.8

100 s: (15.3...16.0)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 8.0...8.2

Del. quantity cm3/ : 2.5...3.0

100 s: (2.3...3.3)

Spread cm3 : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.20...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del. quantity : 156.0...158.0

1000 : (153.5...160.5)

Spread cm3 : 4.00

1000 : (7.50)

## RATED SPEED

### 1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 15.8

Testing:

1st rack travel in: 12.50

Speed rpm : 1030...1045

2nd rack travel in: 4.00

Speed rpm : 1100...1130  
4th rack travel in: 1300  
Speed rpm : 0.00...1.40

#### LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 8.1

#### Testing:

Speed rpm : 200

Minimum rack travel: 10.70

Speed rpm : 300

Rack travel in mm : 8.00...8.20

Rack travel in mm : 3.00

Speed rpm : 370...410

#### TORQUE CONTROL

Dimension a mm : 0.40

Torque control curve - 1st version

1st speed rpm : 980

Rack travel in m: 13.40...13.60

2nd speed rpm : 600

Rack travel in m: 14.40...14.60

3rd speed rpm : 750

Rack travel in m: 13.90...14.10

4th speed rpm : 825

Rack travel in m: 13.60...13.80

#### Aneroid/Altitude

##### Compensator Test

#### 1st version

##### Setting

Speed rpm : 600

Pressure hPa : 1000

Rack travel mm : 14.20...14.30

##### Measurement

Speed 1/min : 600

1st pressure hPa : -

Rack travel in m: 12.70...12.90

2nd pressure hPa : 290

Rack travel in m: 13.80...13.90

3rd pressure hPa : 260

Rack travel in m: 13.20...13.40

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000

Speed rpm : 980

Del.quantity cm<sup>3</sup>/ : 136.0...138.0

1000 s: (132.0...142.0)

Aneroid pressure h: -

Speed rpm : 600

Del.quantity cm<sup>3</sup>/ : 122.0...124.0  
1000 s: (119.5...126.5)

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.50

Speed rpm : 1030...1045

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 280.0...320.0

1000 s: (276.0...324.0)

Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 300

Rack travel in mm : 8.00...8.20

Del.quantity cm<sup>3</sup>/ : 25.5...30.5

1000 s: (23.0...33.0)

Spread cm<sup>3</sup> : 4.50

1000 s: (7.50)

#### Remarks:

:  
Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 10,0 06  
Edition : 05.02.93  
Replaces : 08.91  
Test oil : ISO-4113

Combination no. : 0 401 846 745

Injection pump  
Pump designation : PE6P110A320RS3080  
EP type number : 0 411 816 722  
Governor  
Governor design. : RQV250...1100PA919  
Governor no. : 0 421 813 776

Customer-spec. information  
Customer : VOLVO

Engine : TD100GA

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.30...12.40

Del.quantity cm3/ : 16.7...16.9

100 s: (16.4...17.2)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 3.9...4.1

Del.quantity cm3/ : 1.5...1.9

100 s: (1.2...2.1)

Spread cm3 : 0.3

100 s: (0.6)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.20...1.30

2nd speed rpm : 370

travel mm : 2.60...3.00

3rd speed rpm : 430

travel mm : 3.50...3.90

4th speed rpm : 1160

travel mm : 8.10...8.30

5th speed rpm : 1210

travel mm : 9.40...9.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1180

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 167.0...169.0

1000 : (164.0...172.0)

Spread cm3 : 4.00

1000 : (7.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 115...123

Testing:  
1st rack travel in: 11.30  
Speed rpm : 1160...1170  
2nd rack travel in: 4.00  
Speed rpm : 1220...1250  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 60...68

Testing:  
Speed rpm : 100  
Minimum rack travel: 5.30  
Speed rpm : 250  
Rack travel in mm : 3.90...4.10

CONSTANT REGULATION  
Speed rpm : 270...380

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.30...12.40

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.80...10.00  
2nd pressure hPa : 610  
Rack travel in m: 12.10...12.20  
3rd pressure hPa : 280  
Rack travel in m: 10.10...10.30

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 121.0...124.0  
1000 s: (118.5...126.5)

#### BREAKAWAY

1st version

H01

1mm rack travel less than  
full load rack tr: 11.30  
Speed rpm : 1160...1170

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 160.0...190.0  
1000 s: (156.0...196.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 3.90...4.10  
Del.quantity cm<sup>3</sup>/ : 15.0...19.0  
1000 s: (12.5...21.5)  
Spread cm<sup>3</sup> : 3.00  
1000 s: (6.00)

#### Remarks:

:  
Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 8,3 p 9  
 Edition : 26.06.92  
 Replaces : 03.91  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 905  
 Injection pump  
 Pump designation : PE6P110A720RS3225Z  
 EP type number : 0 411 816 762  
 Governor  
 Governor design. : RQ275/1200PA913-1  
 Governor no. : 0 421 801 549

Customer-spec. information  
 Customer : DAF

Engine : HT 168

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.30...12.40

Del. quantity cm<sup>3</sup>/ : 12.0...12.2

100 s : (11.7...12.4)

Spread cm<sup>3</sup> : 0.4

100 s : (0.7)

2nd speed rpm : 275.0

Rack travel in mm : 7.2...7.4

Del. quantity cm<sup>3</sup>/ : 1.4...1.9

100 s : (1.1...2.1)

Spread cm<sup>3</sup> : 0.4

100 s : (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.20...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1000

Aneroid pressure h: 1000

Del. quantity : 120.0...122.0

1000 : (117.5...124.5)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

### 1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 15.8

Testing:

1st rack travel in: 11.30

Speed rpm : 1235...1250

2nd rack travel in: 4.00

Speed rpm : 1320...1350

4th rack travel in: 1400

Speed rpm : 0.00...1.40

## LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 275  
Rack travel in mm : 4.8

Testing:

Speed rpm : 100  
Minimum rack travel: 7.00  
Speed rpm : 275  
Rack travel in mm : 4.70...4.90  
Rack travel in mm : 2.00  
Speed rpm : 340...380

TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 13.30...13.50  
2nd speed rpm : 1200  
Rack travel in m: 13.10...13.40

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 12.30...12.40

Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 10.80...10.90  
2nd pressure hPa : 400  
Rack travel in m: 12.00...12.10  
3rd pressure hPa : 320  
Rack travel in m: 11.50...11.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 83.5...85.5  
1000 s: (81.0...88.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.30  
Speed rpm : 1235...1250

LOW IDLE

Speed rpm : 275

H03

Rack travel in mm : 4.70...4.90

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,0 x 2  
Edition : 05.03.93  
Replaces : 06.91  
Test oil : ISO-4113

Combination no. : 0 401 846 946

Injection pump  
Pump designation : PE6P110A320LS3851-1  
EP type number : 0 411 818 780  
Governor  
Governor design. : RQ300/1050PA1007-1  
Governor no. : 0 421 801 589

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM441

1st version kW : 151.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50  
: (4.35...4.55)

Rack travel in mm : 9.00...12.00

Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.20...12.30

Del.quantity cm3/ : 11.8...12.0

100 s: (11.5...12.2)

Spread cm3 : 0.8

100 s: (1.3)

2nd speed rpm : 300.0

Rack travel in mm : 6.7...6.9

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.4)

Spread cm3 : 0.6

100 s: (1.1)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 650

Rack travel in mm : 13.10...13.90

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 118.0...120.0

1000 : (115.5...122.5)

Spread cm3 : 8.50

1000 : (13.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 13.5

Testing:

1st rack travel in: 11.20  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...2.00

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.8

Testing:

Speed rpm : 200  
Minimum rack trave: 8.40  
Speed rpm : 300  
Rack travel in mm : 6.70...6.90  
Rack travel in mm : 2.00  
Speed rpm : 390...430

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600  
Del.quantity cm3/ : 119.0...125.0  
1000 s: (116.5...127.5)  
Spread cm3 : 11.00  
1000 s: (14.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.20  
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 23.10.92  
Replaces : 09.92  
Test oil : ISO-4113

Combination no. : 0 401 846 967

Injection pump  
Pump designation : PE6P110A320LS3851-2  
EP type number : 0 411 816 785  
Governor  
Governor design. : RQV350...1050PA378  
-12  
Governor no. : 0 421 814 016

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM441

1st version kW : 151.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50  
: (4.35...4.55)

Rack travel in mm : 9.00...12.00

Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.20...12.30

Del.quantity cm3/ : 11.8...12.0

100 s: (11.5...12.2)

Spread cm3 : 0.8

100 s: (1.3)

2nd speed rpm : 350.0

Rack travel in mm : 7.5...7.7

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.4)

Spread cm3 : 0.6

100 s: (1.1)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 1.80...2.30

2nd speed rpm : 455  
travel mm : 3.40...3.90

3rd speed rpm : 880  
travel mm : 5.60...6.10

4th speed rpm : 1107  
travel mm : 8.00...8.50

5th speed rpm : 1209  
travel mm : 9.80...10.20

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 9.90...12.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1050  
Del.quantity : 118.0...120.0  
1000 : (115.5...122.5)  
Spread cm3 : 8.50  
1000 : (13.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 116...124

Testing:  
1st rack travel in: 11.20  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1300  
Speed rpm : 0.00...1.40

LOW IDLE 1  
Control lever  
position degrees: 67...75

Testing:  
Speed rpm : 250  
Minimum rack trave: 10.00  
Speed rpm : 350  
Rack travel in mm : 7.50...7.70

CONSTANT REGULATION  
Speed rpm : 350...450

#### START CUT-OUT

Speed 1/min : 270 (290)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 600  
Del.quantity cm3/ : 119.0...125.0  
1000 s: (116.5...127.5)  
Spread cm3 : 11.00  
1000 s: (14.0)  
Speed rpm : 1050  
Del.quantity cm3/ : 88.0...90.0  
1000 s: (85.5...92.5)  
Spread cm3 : 11.00  
1000 s: (14.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

H07

full load rack tr: 11.20  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 20.09.91  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 401 848 798

Injection pump  
Pump designation : PE8P110A320LS3846-2  
EP type number : 0 411 818 725  
Governor  
Governor design. : RQ300/1050PA187-25  
Governor no. : 0 421 801 482

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM442

1st version kW : 213.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50  
: (4.35...4.55)  
Rack travel in mm : 9.00...12.00  
Firing order : 8- 7- 2- 6- 3- 5- 4  
-1

Phasing : 0-45-90-135-180-225-  
270-315  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 1050  
Rack travel in mm : 12.20...12.30  
Del.quantity cm3/ : 12.0...12.2  
100 s: (11.7...12.4)  
Spread cm3 : 0.8  
100 s: (1.3)

2nd speed rpm : 300.0  
Rack travel in mm : 7.5...8.1  
Del.quantity cm3/ : 1.6...2.2  
100 s: (1.3...2.4)  
Spread cm3 : 0.6  
100 s: (0.9)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 650  
Rack travel in mm : 13.10...13.90

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1050  
Del.quantity : 120.0...122.0  
1000 : (117.5...124.5)  
Spread cm3 : 8.50  
1000 : (13.00)

## RATED SPEED

1st version  
Setting point:  
Speed rpm : 650  
Rack travel in mm : 13.5

Testing:

1st rack travel in: 11.20

Speed rpm : 1090...1100

2nd rack travel in: 4.00

Speed rpm : 1175...1205

4th rack travel in: 1300

Speed rpm : 0.00...2.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 7.8

Testing:

Speed rpm : 200

Minimum rack trave: 9.50

Speed rpm : 300

Rack travel in mm : 7.50...8.10

Rack travel in mm : 2.00

Speed rpm : 390...430

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600

Del.quantity cm3/ : 121.0...127.0

1000 s: (118.5...129.5)

Spread cm3 : 11.00

1000 s: (14.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.20

Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 140.0...160.0

1000 s: (136.0...164.0)

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 20.09.91  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 401 848 816

Injection pump  
Pump designation : PE8P110A320LS3846-2  
EP type number : 0 411 818 725  
Governor  
Governor design. : RQ300/1050PA1007  
Governor no. : 0 421 801 588

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM442

1st version kW : 195.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50  
: (4.35...4.55)  
Rack travel in mm : 9.00...12.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.90...12.00

Del.quantity cm<sup>3</sup>/ : 11.4...11.6

100 s: (11.1...11.8)

Spread cm<sup>3</sup> : 0.8

100 s: (1.3)

2nd speed rpm : 300.0

Rack travel in mm : 7.7...8.3

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.4)

Spread cm<sup>3</sup> : 0.6

100 s: (1.1)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 650

Rack travel in mm : 13.10...13.90

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 114.0...116.0

1000 : (111.5...118.5)

Spread cm<sup>3</sup> : 8.50

1000 : (13.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 13.5

Testing:

1st rack travel in: 10.90

Speed rpm : 1090...1100

2nd rack travel in: 4.00

Speed rpm : 1170...1200

4th rack travel in: 1300

Speed rpm : 0.00...2.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 8.0

Testing:

Speed rpm : 200

Minimum rack trave: 9.50

Speed rpm : 300

Rack travel in mm : 7.70...8.30

Rack travel in mm : 2.00

Speed rpm : 390...430

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600

Del.quantity cm3/ : 114.0...120.0

1000 s: (111.5...122.5)

Spread cm3 : 11.00

1000 s: (14.)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.90

Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 130.0...150.0

1000 s: (126.0...154.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FIA 17,2 g1  
Edition : 03.02.93  
Replaces : 11.91  
Test oil : ISO-4113  
Combination no. : 0 401 848 822  
Injection pump  
Pump designation : PE8P120A920/5LS3857  
EP type number : 0 411 828 725  
Governor  
Governor design. : RQV300...1200PA357  
Governor no. : 0 421 813 188

Customer-spec. information  
Customer : IVECO-FIAT

Engine : 8280.02.412

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
Overflow valve : 1 417 413 025  
Inlet press., bar : 1.50  
Test nozzle holder  
assembly : 1 688 901 019  
Opening  
pressure, bar : 207...210  
Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.85...2.95  
: (2.85...3.00)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 4- 3- 6- 5-  
7- 2

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 8.00...8.10

Del.quantity cm3/ : 14.1...14.3

100 s: (13.8...14.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.0...4.4

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.3

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1295

travel mm : 9.10...9.30

2nd speed rpm : 250

travel mm : 0.70...1.10

3rd speed rpm : 500

travel mm : 3.30...3.90

4th speed rpm : 800

travel mm : 5.10...5.50

5th speed rpm : 1500

travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1330

Rack travel in mm : 6.30...8.90

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del.quantity : 141.0...143.0

1000 : (138.0...146.0)

Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 114...122

Testing:  
1st rack travel in: 7.00  
Speed rpm : 1290...1300  
2nd rack travel in: 4.00  
Speed rpm : 1335...1365  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 60...68

Testing:  
Speed rpm : 100  
Minimum rack travel: 5.70  
Speed rpm : 300  
Rack travel in mm : 4.10...4.30

CONSTANT REGULATION  
Speed rpm : 310...440

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 600  
Del.quantity cm3/ : 139.0...145.0  
1000 s: (136.0...148.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack travel: 7.00  
Speed rpm : 1290...1300

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 220.0...250.0  
1000 s: (216.0...254.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.00...4.40  
Del.quantity cm3/ : 17.0...23.0  
1000 s: (14.0...26.0)

Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

## Note remarks

Del.quantity : 204.0...206.0  
1000 : (201.0...209.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version:  
Control lever  
position degrees: 116...124

Testing:  
1st rack travel in: 9.50  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1105...1135  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 80...88

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.80  
Speed rpm : 300  
Rack travel in mm : 5.20...5.40

CONSTANT REGULATION  
Speed rpm : 335...445

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 10.50...10.60

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.20...9.40  
2nd pressure hPa : 380  
Rack travel in m: 9.60...9.70  
3rd pressure hPa : 500  
Rack travel in m: 10.10...10.30

#### START CUT-OUT

Speed 1/min : 230 (250)

#### FUEL DELIVERY CHARACTERISTICS

1st version

H15

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 144.0...146.0  
1000 s: (141.0...149.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.50  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 190.0...210.0  
1000 s: (186.0...214.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.20...5.40  
Del.quantity cm3/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7779

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 11,7 f  
Edition : 27.11.92  
Replaces : 06.90  
Test oil : ISO-4113

Combination no. : 0 401 876 335

Injection pump  
Pump designation : PE6P120A320RS415-1  
EP type number : 0 411 826 123  
Governor  
Governor design. : RSV250...1100P5A508  
-8

Governer no. : 0 421 833 298

Customer-spec. information  
Customer : DAF

Engine : DKV 1160

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 11.10...11.20

Del.quantity cm3/ : 17.1...17.3

100 s: (16.8...17.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 6.7...6.9

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 650

Aneroid pressure h: 700

Del.quantity : 171.0...173.0

1000 : (168.5...175.5)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: 95...103

Testing:

1st rack travel in: 9.10

Speed rpm : 1135...1145

2nd rack travel in: 4.00

Speed rpm : 1175...1205

3rd rack travel in: 4.00  
Speed rpm : 1200...1230  
4th rack travel in: 1375  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 66...74  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.8

#### Testing:

Speed rpm : 100  
Speed rpm : 250  
Rack travel in mm : 6.20...6.40  
Rack travel in mm : 2.00  
Speed rpm : 630...730

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1090  
Rack travel in m: 10.10...10.20  
2nd speed rpm : 650  
Rack travel in m: 11.40...11.50  
3rd speed rpm : 800  
Rack travel in m: 10.80...11.00  
4th speed rpm : 850  
Rack travel in m: 10.40...10.70

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 11.10...11.20

#### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 9.50...9.70  
2nd pressure hPa : 290  
Rack travel in m: 10.70...10.90  
3rd pressure hPa : 260  
Rack travel in m: 10.20...10.50

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 1090  
Del.quantity cm<sup>3</sup>/ : 159.0...161.0  
1000 s: (156.0...164.0)  
Aneroid pressure h: -  
Speed rpm : 600

H17

Del.quantity cm<sup>3</sup>/ : 129.0...131.0  
1000 s: (126.5...133.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.10  
Speed rpm : 1135...1145

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 310.0...350.0  
1000 s: (306.0...354.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.20...6.40

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 11,7 f1  
 Edition : 27.11.92  
 Replaces : 06.90  
 Test oil : ISO-4113

Combination no. : 0 401 876 338

Injection pump  
 Pump designation : PE6P12DA32ORS415-1  
 EP type number : 0 411 826 123  
 Governor  
 Governor design. : RSV250...1100P5A508  
 Governor no. : 0 421 833 321

Customer-spec. information  
 Customer : DAF

Engine : KS 238

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 11.90...12.00

Del.quantity cm3/ : 18.8...19.0  
 100 s: (18.5...19.2)

Spread cm3 : 0.5  
 100 s: (0.9)

2nd speed rpm : 250.0  
 Rack travel in mm : 6.6...6.8  
 Del.quantity cm3/ : 1.7...2.3  
 100 s: (1.4...2.6)

Spread cm3 : 0.8  
 100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 5.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 650  
 Aneroid pressure h: 700  
 Del.quantity : 188.0...190.0  
 1000 : (185.5...192.5)

Spread cm3 : 5.00  
 1000 : (9.00)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 99...107

Testing:  
 1st rack travel in: 10.00  
 Speed rpm : 1130...1140  
 2nd rack travel in: 4.00  
 Speed rpm : 1185...1215

3rd rack travel in: 4.00  
Speed rpm : 1225...1255  
4th rack travel in: 14.00  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control Lever  
position degrees: 70...78  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 6.0

#### Testing:

Speed rpm : 100  
Speed rpm : 250  
Rack travel in mm : 6.40...6.60  
Rack travel in mm : 2.00  
Speed rpm : 600...700

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1090  
Rack travel in m: 11.00...11.10  
2nd speed rpm : 650  
Rack travel in m: 12.20...12.30  
3rd speed rpm : 760  
Rack travel in m: 11.60...11.80  
4th speed rpm : 810  
Rack travel in m: 11.20...11.40

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 11.90...12.00

#### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 9.70...9.90  
2nd pressure hPa : 300  
Rack travel in m: 11.30...11.40  
3rd pressure hPa : 230  
Rack travel in m: 10.40...10.70

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 1090  
Del.quantity cm<sup>3</sup>/ : 181.0...183.0  
1000 s: (178.0...186.0)  
Aneroid pressure h: -  
Speed rpm : 600

Del.quantity cm<sup>3</sup>/ : 131.0...133.0  
1000 s: (128.5...135.5)

#### BREAKAWAY

1st version  
Imm rack travel less than

full load rack tr: 10.00  
Speed rpm : 1130...1140

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 290.0...330.0  
1000 s: (286.0...334.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.40...6.60

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : PEN 7,1 d  
Edition : 7.7.93  
Replaces : 23.10.91  
Test oil : ISO-4113

Combination no. : 0 401 876 749

Injection pump  
Pump designation : PE6P120A320RS3163  
EP type number : 0 411 826 750  
Governor  
Governor design. : RSV250...1250POA374  
Governor no. : 0 421 833 222

Customer-spec. information  
Customer : VOLVO-PENTA

Engine : TAMD 71 A

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)

Rack travel in mm : 9.00...12.00

H2O

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.80...12.90

Del.quantity cm3/ : 21.6...21.8

100 s: (21.3...22.1)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.0...4.2

Del.quantity cm3/ : 1.1...1.6

100 s: (0.8...1.8)

Spread cm3 : 0.5

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.75

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1000

Aneroid pressure h: 1500

Del.quantity : 216.0...218.0

1000 : (213.0...221.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

### 1st version

Control lever

position degrees: 103...111

### Testing:

1st rack travel in: 11.80

Speed rpm : 1290...1300

2nd rack travel in: 4.00

Speed rpm : 1370...1400  
4th rack travel in: 1500  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 72...80  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 3.6  
Speed rpm : 250  
Rack travel in mm : 4.00...4.20  
Rack travel in mm : 2.00  
Speed rpm : 360...420

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1500  
Rack travel mm : 12.80...12.90

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 7.80...8.00  
2nd pressure hPa : 310  
Rack travel in m: 8.00...8.10  
3rd pressure hPa : 1000  
Rack travel in m: 12.40...12.60

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 1000  
Del.quantity cm<sup>3</sup>/ : 116.0...118.0  
1000 s: (113.0...121.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 11.80  
Speed rpm : 1290...1300

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 170.0...200.0  
1000 s: (166.0...204.0)

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.00...4.20  
Del.quantity cm<sup>3</sup>/ : 11.0...16.0  
1000 s: (8.5...18.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

#### APPLICATION

Navy

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9g10  
 Edition : 21.08.91  
 Replaces : 08.91  
 Test oil : ISO-4113  
 Combination no. : 0 402 036 086  
 Injection pump  
 Pump designation : PES6P110A720/3LS477-  
 2  
 EP type number : 0 412 016 071  
 Governor  
 Governor design. : RQ250/1050PA845-2  
 Governor no. : 0 421 801 604

Customer-spec. information  
 Customer : MAN

Engine : D2866 F/UM

1st version kW : 152.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)

Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 10.90...11.00

Del.quantity cm3/ : 10.0...10.3

100 s: (9.7...10.5)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 6.0...6.2

Del.quantity cm3/ : 1.5...2.0

100 s: (1.2...2.2)

Spread cm3 : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 800

Del.quantity : 100.0...103.0

1000 : (97.5...105.5)

Spread cm3 : 4.00

1000 : (7.50)

## RATED SPEED

### 1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.90

Speed rpm : 1095...1110

2nd rack travel in: 4.00

Speed rpm : 1170...1200

4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 6.1

#### Testing:

Speed rpm : 100

Minimum rack travel: 7.60

Speed rpm : 250

Rack travel in mm : 6.00...6.20

Rack travel in mm : 2.00

Speed rpm : 330...370

#### TORQUE CONTROL

Dimension a mm : -

Torque control curve - 1st version

1st speed rpm : 800

Rack travel in m: 10.90...11.00

2nd speed rpm : 1050

Rack travel in m: 10.80...11.00

#### START CUT-OUT

Speed 1/min : 170 (190)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 1050

Del.quantity cm<sup>3</sup>/ : 110.0...114.0

1000 s: (107.0...117.0)

Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 92.0...96.0

1000 s: (89.0...99.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.90

Speed rpm : 1095...1110

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 110.0...130.0

1000 s: (106.0...134.0)

#### LOW IDLE

Speed rpm : 250

Rack travel in mm : 6.00...6.20

Del.quantity cm<sup>3</sup>/ : 15.0...20.0

1000 s: (12.5...22.5)

Spread cm<sup>3</sup> : 4.50

1000 s: (7.50)

Remarks:

: MAN-NR. 3-7156

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN  
Edition : 18.12.91  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 036 088  
Injection pump  
Pump designation : PES6P110A720/3LS477-2  
EP type number : 0 412 016 071  
Governor  
Governor design. : RQ300/750PA845-3  
Governor no. : 0 421 801 630

Customer-spec. information  
Customer : MAN

Engine : D2866 UH

1st version kW : 133.0  
Rated speed : 1500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
: (3.45...3.65)

Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 11.80...11.90

Del.quantity cm3/ : 12.6...12.9

100 s: (12.3...13.1)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.2

Del.quantity cm3/ : 1.5...2.0

100 s: (1.2...2.2)

Spread cm3 : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Del.quantity : 126.0...129.0

1000 : (123.5...131.5)

Spread cm3 : 4.00

1000 : (7.50)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.80

Speed rpm : 795...810

2nd rack travel in: 4.00

Speed rpm : 830...860

4th rack travel in: 1000  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.1

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.60  
Speed rpm : 300  
Rack travel in mm : 6.00...6.20  
Rack travel in mm : 2.00  
Speed rpm : 350...410

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 750  
Rack travel in m: 11.80...11.90  
2nd speed rpm : 500  
Rack travel in m: 11.80...12.00

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 117.0...121.0  
1000 s: (114.0...124.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.80  
Speed rpm : 795...810

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 110.0...130.0  
1000 s: (106.0...134.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.00...6.20  
Del.quantity cm<sup>3</sup>/ : 15.0...20.0  
1000 s: (12.5...22.5)  
Spread cm<sup>3</sup> : 4.50  
1000 s: (7.50)

H25

Remarks:

: MAN-NR. 3-7187

APPLICATION

Rail car



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM  
Edition : 22.01.93  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 036 749  
  
Injection pump  
Pump designation : PES6P110A120RS3286  
EP type number : 0 412 016 737  
Governor  
Governor design. : KQV350...1150PA1014  
-2K  
Governor no. : 0 421 815 296

Customer-spec. information  
Customer : CUMMINS

Engine : 6CTA-A

1st version kW : 168.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 3.20...3.30  
: (3.15...3.35)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 15.30...15.40

Del. quantity cm<sup>3</sup>/ : 15.1...15.3

100 s: (14.9...15.5)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 350.0

Rack travel in mm : 5.7...5.9

Del. quantity cm<sup>3</sup>/ : 1.3...1.7

100 s: (1.0...1.9)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 2.10...2.40

2nd speed rpm : 450

travel mm : 3.40...3.80

3rd speed rpm : 900

travel mm : 5.60...6.00

4th speed rpm : 1200

travel mm : 8.10...8.30

5th speed rpm : 1400

travel mm : 10.20...10.60

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1200

Del. quantity : 151.0...153.0

1000 : (149.0...155.0)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 55...63

### Testing:

1st rack travel in: 14.10  
Speed rpm : 1215...1225  
2nd rack travel in: 4.00  
Speed rpm : 1380...1410  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 12...20

### Testing:

Speed rpm : 275  
Minimum rack travel: 7.30  
Speed rpm : 350  
Rack travel in mm : 5.70...5.90

## CONSTANT REGULATION

Speed rpm : 350...650

## TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 15.30...15.40  
2nd speed rpm : 750  
Rack travel in m: 14.00...14.40  
3rd speed rpm : 1150  
Rack travel in m: 15.10...15.30  
4th speed rpm : 650  
Rack travel in m: 13.80...14.20

Aneroid/Altitude  
Compensator Test

## 1st version

### Setting

Speed rpm : 1100  
Pressure hPa : 1200  
Rack travel mm : 15.30...15.40

### Measurement

Speed 1/min : 1100

1st pressure hPa : -

Rack travel in m: 8.90...9.30

2nd pressure hPa : 250

Rack travel in m: 10.60...10.70

3rd pressure hPa : 560

Rack travel in m: 13.60...14.00

## START CUT-OUT

H27

Speed 1/min : 290 (300)

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 1200  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 152.0...156.0  
1000 s: (150.0...158.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 74.5...78.5  
1000 s: (72.5...80.5)

## BREAKAWAY

### 1st version

1mm rack travel less than

full load rack tr: 14.10  
Speed rpm : 1215...1225

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...175.0  
1000 s: (130.0...180.0)

## LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.70...5.90  
Del.quantity cm<sup>3</sup>/ : 13.0...17.0  
1000 s: (10.5...19.5)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (9.00)

### Remarks:

: C.D.C. # 3921971

Start-of-delivery mark = 5.5° after  
start of delivery cyl. 1.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM  
Edition : 22.01.93  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 036 750  
  
Injection pump  
Pump designation : PES6P110A120RS3286  
EP type number : 0 412 016 737  
Governor  
Governor design. : RQV350...1150PA1014  
-3K  
Governor no. : 0 421 815 298

Customer-spec. information  
Customer : CDC

Engine : 6CTA-A

1st version kW : 156.5  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 22...24

Prestroke mm : 3.20...3.30  
: (3.15...3.35)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100  

---

Rack travel in mm : 14.50...14.60  

---

Del. quantity cm<sup>3</sup>/ : 14.1...14.3  

---

100 s: (13.9...14.5)  

---

Spread cm<sup>3</sup> : 0.4  

---

100 s: (0.7)  

---

2nd speed rpm : 350.0  
Rack travel in mm : 5.8...6.0  
Del. quantity cm<sup>3</sup>/ : 1.7...2.1  
100 s: (1.4...2.3)  
Spread cm<sup>3</sup> : 0.6  
100 s: (0.9)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 2.10...2.40  
2nd speed rpm : 450  
travel mm : 3.40...3.80  
3rd speed rpm : 900  
travel mm : 5.60...6.00  
4th speed rpm : 1200  
travel mm : 8.10...8.30  
5th speed rpm : 1400  
travel mm : 10.20...10.60

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Aneroid pressure h: 1200  
Del. quantity : 141.5...143.5  
1000 : (139.5...145.5)  
Spread cm<sup>3</sup> : 4.00  
1000 : (7.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 52...60

Testing:  
1st rack travel in: 13.30  
Speed rpm : 1220...1230  
2nd rack travel in: 4.00  
Speed rpm : 1365...1395  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 10...18

Testing:  
Speed rpm : 275  
Minimum rack travel: 7.30  
Speed rpm : 350  
Rack travel in mm : 5.80...6.00

CONSTANT REGULATION  
Speed rpm : 350...520

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 14.50...14.60  
2nd speed rpm : 750  
Rack travel in m: 13.40...13.60  
3rd speed rpm : 1150  
Rack travel in m: 14.30...14.50  
4th speed rpm : 650  
Rack travel in m: 13.10...13.50

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 1100  
Pressure hPa : 1200  
Rack travel mm : 14.50...14.60

Measurement  
Speed 1/min : 1100

1st pressure hPa : -  
Rack travel in m: 8.90...9.30  
2nd pressure hPa : 250  
Rack travel in m: 10.60...10.70  
3rd pressure hPa : 560  
Rack travel in m: 13.60...14.00

## START CUT-OUT

J01

Speed 1/min : 290 (300)

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 750  
Del.quantity cm3/ : 137.0...141.0  
1000 s: (135.0...143.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 74.5...78.5  
1000 s: (72.5...80.5)

## BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.30  
Speed rpm : 1220...1230

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...175.0  
1000 s: (130.0...180.0)

## LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.80...6.00  
Del.quantity cm3/ : 17.0...21.0  
1000 s: (14.5...23.5)  
Spread cm3 : 6.00  
1000 s: (9.00)

Remarks:

: C.D.C. # 3921972

Start-of-delivery mark = 5.5° after  
start of delivery cyl. 1.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM  
Edition : 22.01.93  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 036 751  
Injection pump  
Pump designation : PES6P110A120RS3286  
EP type number : 0 412 016 737  
Governor  
Governor design. : RGV350..1200PA1014  
-4K  
Governor no. : 0 421 815 299

Customer-spec. information  
Customer : CDC

Engine : 6CTA-A

1st version kW : 156.5  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 3.20...3.30  
: (3.15...3.35)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100  
Rack travel in mm : 14.50...14.60  
Del.quantity cm3/ : 14.1...14.3  
100 s: (13.9...14.5)  
Spread cm3 : 0.4  
100 s: (0.7)

2nd speed rpm : 350.0  
Rack travel in mm : 5.8...6.0  
Del.quantity cm3/ : 1.7...2.1  
100 s: (1.4...2.3)  
Spread cm3 : 0.6  
100 s: (0.9)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 2.10...2.40  
2nd speed rpm : 450  
travel mm : 3.40...3.80  
3rd speed rpm : 900  
travel mm : 5.60...6.00  
4th speed rpm : 1200  
travel mm : 8.10...8.30  
5th speed rpm : 1400  
travel mm : 10.20...10.60

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Aneroid pressure h: 1200  
Del.quantity : 141.5...143.5  
1000 : (139.5...145.5)  
Spread cm3 : 4.00  
1000 : (7.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 54...62

Testing:  
1st rack travel in: 13.30  
Speed rpm : 1270...1280  
2nd rack travel in: 4.00  
Speed rpm : 1400...1430  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 10...18

Testing:  
Speed rpm : 275  
Minimum rack travel: 7.30  
Speed rpm : 350  
Rack travel in mm : 5.80...6.00

CONSTANT REGULATION  
Speed rpm : 350...520

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 14.50...14.60  
2nd speed rpm : 750  
Rack travel in m: 13.40...13.60  
3rd speed rpm : 1150  
Rack travel in m: 14.30...14.50  
4th speed rpm : 650  
Rack travel in m: 13.10...13.50

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 1100  
Pressure hPa : 1200  
Rack travel mm : 14.50...14.60

Measurement  
Speed 1/min : 1100

1st pressure hPa : -  
Rack travel in m: 8.90...9.30  
2nd pressure hPa : 215  
Rack travel in m: 10.40...10.50  
3rd pressure hPa : 475  
Rack travel in m: 13.00...13.40

## START CUT-OUT

J03

Speed 1/min : 290 (300)

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 137.0...141.0  
1000 s: (135.0...143.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 74.5...78.5  
1000 s: (72.5...80.5)

## BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.30  
Speed rpm : 1270...1280

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...175.0  
1000 s: (130.0...180.0)

## LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.80...6.00  
Del.quantity cm<sup>3</sup>/ : 17.0...21.0  
1000 s: (14.5...23.5)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (9.00)

Remarks:  
: C.D.C. # 3921973

Start-of-delivery mark = 5.5° after  
start of delivery cyl. 1.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI  
 Edition : 20.03.92  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 046 340CL  
 Injection pump  
 Pump designation : PES6P120A320RS525  
 EP type number : 0 412 026 058  
 Governor  
 Governor design. : RQV300...1050PA955  
 Governor no. : 0 421 813 856

Customer-spec. information  
 Customer : RVI

Engine : MIDS062045J

1st version kW : 160.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 9.40...9.50

Del.quantity cm3/ : 13.8...14.0

100 s: (13.5...14.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.3...5.7

Del.quantity cm3/ : 1.5...2.1

100 s: (1.2...2.4)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1050

travel mm : 8.00...8.20

2nd speed rpm : 300

travel mm : 1.10...1.50

3rd speed rpm : 430

travel mm : 3.40...4.00

4th speed rpm : 1400

travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1075

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 138.0...140.0

1000 : (135.0...143.0)

Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 298...306

#### Testing:

1st rack travel in: 8.40  
Speed rpm : 1130...1140  
2nd rack travel in: 4.20  
Speed rpm : 1190...1220  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 244...252

#### Testing:

Speed rpm : 200  
Minimum rack travel: 7.40  
Speed rpm : 300  
Rack travel in mm : 5.00...5.20

#### CONSTANT REGULATION

Speed rpm : 310...430

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Speed rpm : 700  
Del. quantity cm3/ : 126.0...134.0  
1000 s: (123.0...137.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 8.40  
Speed rpm : 1130...1140

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm3/ : 140.0...160.0  
1000 s: (136.0...164.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : -4.20...-4.40

#### Remarks:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : UNI  
Edition : 9.7.1993  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 046 346

Injection pump  
Pump designation : PES6P110A720RS530  
EP type number : 0 412 016 075  
Governor  
Governor design. : RQV450...1050PA1016  
-2  
Governor no. : 0 421 813 967

Customer-spec. information  
Customer : IVECO-UNIC

Engine : 8365.25.532

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
: (1.95...2.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 9.80...9.90

Del.quantity cm<sup>3</sup>/ : 11.6...11.8

100 s: (11.4...12.1)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 450.0

Rack travel in mm : 5.4...5.8

Del.quantity cm<sup>3</sup>/ : 1.7...2.2

100 s: (1.4...2.4)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1095

travel mm : 6.70...6.90

2nd speed rpm : 450

travel mm : 0.70...1.10

3rd speed rpm : 700

travel mm : 3.30...3.90

4th speed rpm : 850

travel mm : 4.80...5.20

5th speed rpm : 1650

travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1430

Rack travel in mm : 8.50...11.10

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 700

Aneroid pressure h: 700

Del.quantity : 116.5...118.5

1000 : (114.0...121.0)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 96...106

Testing:  
1st rack travel in: 8.80  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1195...1225  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 66...74

Testing:  
Speed rpm : 375  
Minimum rack travel: 7.70  
Speed rpm : 450  
Rack travel in mm : 5.50...5.70  
Rack travel in mm : 2.00  
Speed rpm : 510...570

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 9.80...9.90

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.10...9.30  
2nd pressure hPa : 400  
Rack travel in m: 9.60...9.70  
3rd pressure hPa : 380  
Rack travel in m: 9.30...9.50

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 113.0...117.0  
1000 s: (110.0...120.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 97.0...99.0  
1000 s: (94.5...101.5)

## BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 8.80  
Speed rpm : 1090...1100

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 195.0...225.0  
1000 s: (191.0...229.0)

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : UNI 8,3 a 4  
 Edition : 23.10.92  
 Replaces : 09.92  
 Test oil : ISO-4113  
 Combination no. : 0 402 046 348  
 Injection pump  
 Pump designation : PES6P110A72ORS530  
 EP type number : 0 412 016 075  
 Governor  
 Governor design. : RQV450...1100PA1016  
 -4  
 Governor no. : 0 421 813 969

Customer-spec. information  
 Customer : IVECO-UNIC

Engine : 8365.25.533

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.10...11.20

Del.quantity cm3/ : 13.8...14.0

100 s: (13.5...14.2)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 450.0

Rack travel in mm : 5.9...6.3

Del.quantity cm3/ : 1.7...2.2

100 s: (1.4...2.4)

Spread cm3 : 0.4

100 s: (0.7)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1145

travel mm : 6.80...7.00

2nd speed rpm : 450

travel mm : 1.20...1.60

3rd speed rpm : 700

travel mm : 3.30...3.90

4th speed rpm : 950

travel mm : 5.50...5.90

5th speed rpm : 1650

travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1460

Rack travel in mm : 8.80...11.40

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 700

Aneroid pressure h: 700

Del.quantity : 138.0...140.0

1000 : (135.5...142.5)

Spread cm3 : 4.00

1000 : (7.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 96...104

Testing:  
1st rack travel in: 10.10  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1260...1290  
4th rack travel in: 1450  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 66...74

Testing:  
Speed rpm : 325  
Minimum rack travel: 9.60  
Speed rpm : 450  
Rack travel in mm : 6.00...6.20

CONSTANT REGULATION  
Speed rpm : 470...550

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 11.10...11.20

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.10...10.30  
2nd pressure hPa : 480  
Rack travel in m: 10.80...10.90  
3rd pressure hPa : 440  
Rack travel in m: 10.30...10.50

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 1100  
Del.quantity cm<sup>3</sup>/ : 133.0...137.0  
1000 s: (130.0...140.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 111.0...113.0  
1000 s: (108.5...115.5)

## BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.10  
Speed rpm : 1140...1150

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 185.0...215.0  
1000 s: (181.0...219.0)

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : UNI 8,1 b  
Edition : 18.12.91  
Replaces : 11.91  
Test oil : ISO-4113

Combination no. : 0 402 046 350

Injection pump  
Pump designation : PES6P110A720RS531  
EP type number : 0 412 016 076  
Governor  
Governor design. : RQV300...1100PA1016  
-7  
Governor no. : 0 421 813 972

Customer-spec. information  
Customer : IVECO-UNIC

Engine : 8361.25.510

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
: (1.95...2.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.30...10.40

Del.quantity cm<sup>3</sup>/ : 12.0...12.2  
100 s: (11.7...12.4)

Spread cm<sup>3</sup> : 0.4  
100 s: (0.7)

2nd speed rpm : 300.0  
Rack travel in mm : 6.0...6.4  
Del.quantity cm<sup>3</sup>/ : 1.3...1.8  
100 s: (1.0...2.0)  
Spread cm<sup>3</sup> : 0.4  
100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1145  
travel mm : 8.30...8.50  
2nd speed rpm : 300  
travel mm : 0.80...1.20  
3rd speed rpm : 500  
travel mm : 2.50...3.10  
4th speed rpm : 750  
travel mm : 4.50...4.90  
5th speed rpm : 1350  
travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1240  
Rack travel in mm : 8.00...10.60

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Aneroid pressure h: 700  
Del.quantity : 120.0...122.0  
1000 : (117.5...124.5)  
Spread cm<sup>3</sup> : 4.00  
1000 : (7.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 117...125

### Testing:

1st rack travel in: 9.30  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1205...1235  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 63...71

### Testing:

Speed rpm : 100  
Minimum rack travel: 7.70  
Speed rpm : 300  
Rack travel in mm : 6.10...6.30

## CONSTANT REGULATION

Speed rpm : 370...490

Aneroid/Altitude  
Compensator Test

## 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 10.30...10.40

## Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.90...9.20  
2nd pressure hPa : 465  
Rack travel in m: 9.90...10.00  
3rd pressure hPa : 430  
Rack travel in m: 9.40...9.60

## FUEL DELIVERY CHARACTERISTICS

## 1st version

Aneroid pressure h: -  
Speed rpm : 1100  
Del.quantity cm<sup>3</sup>/ : 96.0...98.0  
1000 s: (93.5...100.5)

## BREAKAWAY

1st version

J11

1mm rack travel less than

full load rack tr: 9.30  
Speed rpm : 1140...1150

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 215.0...245.0  
1000 s: (211.0...249.0)

## LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.00...6.40  
Del.quantity cm<sup>3</sup>/ : 13.0...18.0  
1000 s: (10.5...20.5)  
Spread cm<sup>3</sup> : 4.50  
1000 s: (7.50)

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : SSC 10,5 a  
Edition : 18.12.91  
Replaces : 5.84  
Test oil : ISO-4113  
  
Combination no. : 0 402 046 738  
  
Injection pump  
Pump designation : PES6P120A320RS3092-1  
EP type number : 0 412 026 710  
Governor  
Governor design. : RQV320...1300PA654  
Governor no. : 0 421 813 358

Customer-spec. information  
Customer : SSCM

Engine : 6LC 520 S2

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1280  
Rack travel in mm : 12.30...12.40  
Del.quantity cm<sup>3</sup>/ : 19.8...20.0  
100 s: (19.5...20.3)  
Spread cm<sup>3</sup> : 0.5  
100 s: (0.9)

2nd speed rpm : 320.0  
Rack travel in mm : 7.9...8.1  
Del.quantity cm<sup>3</sup>/ : 2.0...2.6  
100 s: (1.7...2.9)  
Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.30...1.50  
2nd speed rpm : 1000  
travel mm : 5.70...6.00  
3rd speed rpm : 1300  
travel mm : 8.30...8.50

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1305  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1280  
Del.quantity : 198.0...200.0  
1000 : (195.0...203.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 61...69

Testing:

1st rack travel in: 12.30

Speed rpm : 1325...1335

2nd rack travel in: 4.00

Speed rpm : 1415...1445

4th rack travel in: 1550

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 13...21

Testing:

Speed rpm : 100

Minimum rack travel: 9.50

Speed rpm : 320

Rack travel in mm : 7.90...8.10

CONSTANT REGULATION

Speed rpm : 350...460

START CUT-OUT

Speed 1/min : 240 (260)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.30

Speed rpm : 1325...1335

LOW IDLE

Speed rpm : 320

Rack travel in mm : 7.90...8.10

Del. quantity cm<sup>3</sup>/ : 20.0...26.0

1000 s: (17.0...29.0)

Spread cm<sup>3</sup> : 8.00

1000 s: (12.00)

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 12,0 f2  
Edition : 03.12.92  
Replaces : 02.91  
Test oil : ISO-4113

Combination no. : 0 402 046 791

Injection pump  
Pump designation : PES6P120A320RS3139  
EP type number : 0 412 026 718  
Governor  
Governor design. : RQV275...950PA728-4  
Governor no. : 0 421 813 678

Customer-spec. information  
Customer : RVI

Engine : MIDR D63540 H

1st version kW : 264.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
(3.45...3.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.30...13.40

Del.quantity cm3/ : 21.2...21.4

100 s: (20.9...21.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 5.6...6.0

Del.quantity cm3/ : 2.4...2.8  
100 s: (2.1...3.1)

Spread cm3 : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 275  
travel mm : 1.30...1.70

2nd speed rpm : 450  
travel mm : 3.30...3.70

3rd speed rpm : 800  
travel mm : 5.60...6.00

4th speed rpm : 950  
travel mm : 6.70...6.90

5th speed rpm : 1500  
travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1

Speed rpm : 1125  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 212.0...214.0  
1000 : (209.0...217.0)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 59...67

#### Testing:

1st rack travel in: 12.30  
Speed rpm : 1015...1025  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 9...17

#### Testing:

Speed rpm : 200  
Minimum rack travel: 7.60  
Speed rpm : 275  
Rack travel in mm : 5.70...5.90

#### CONSTANT REGULATION

Speed rpm : 295...400

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 13.30...13.40

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.10...9.50  
2nd pressure hPa : 200  
Rack travel in m: 9.90...10.00  
3rd pressure hPa : 660  
Rack travel in m: 12.20...12.50

#### START CUT-OUT

Speed 1/min : 195 (215)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 950

Del.quantity cm<sup>3</sup>/ : 210.0...216.0  
1000 s: (207.0...219.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 118.0...120.0  
1000 s: (115.0...123.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 12.30  
Speed rpm : 1015...1025

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 150.0...180.0  
1000 s: (146.0...184.0)

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 5.60...6.00  
Del.quantity cm<sup>3</sup>/ : 24.0...28.0  
1000 s: (21.0...31.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

Start-of-delivery mark 9° cam angle  
after start of delivery cyl. 1.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 9,8 f  
Edition : 21.01.93  
Replaces : 10.92  
Test oil : ISO-4113

Combination no. : 0 402 046 798

Injection pump  
Pump designation : PES6P120A320RS3139  
EP type number : 0 412 026 718  
Governor  
Governor design. : RQ275/1050PA893  
Governor no. : 0 421 801 442

Customer-spec. information  
Customer : RVI

Engine : MIDR 062045 M

1st version kW : 236.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
: (3.45...3.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 11.90...12.00

Del.quantity cm<sup>3</sup>/ : 22.1...22.3

100 s: (21.8...22.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 275.0  
Rack travel in mm : 5.4...5.9  
Del.quantity cm<sup>3</sup>/ : 2.6...3.0  
100 s: (2.3...3.3)  
Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -2

Speed rpm : 600  
Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 600  
Aneroid pressure h: 1000  
Del.quantity : 221.0...223.0  
1000 : (218.0...226.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

### 1st version

Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:  
1st rack travel in: 10.90  
Speed rpm : 1105...1120  
2nd rack travel in: 4.00

Speed rpm : 1200...1230  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 275  
Rack travel in mm : 6.3

#### Testing:

Speed rpm : 175  
Minimum rack travel: 7.10  
Speed rpm : 275  
Rack travel in mm : 5.50...5.70  
Rack travel in mm : 2.00  
Speed rpm : 340...380

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 600  
Rack travel in m: 11.30...11.50  
2nd speed rpm : 1050  
Rack travel in m: 11.30...11.60

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 11.90...12.00

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.70...9.10  
2nd pressure hPa : 360  
Rack travel in m: 11.10...11.20  
3rd pressure hPa : 160  
Rack travel in m: 9.50...9.90

#### START CUT-OUT

Speed 1/min : 195 (215)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 214.0...220.0  
1000 s: (211.0...223.0)  
Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 107.0...109.0  
1000 s: (104.0...112.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.90  
Speed rpm : 1105...1120

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...165.0  
1000 s: (131.0...169.0)

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 5.40...5.90  
Del.quantity cm<sup>3</sup>/ : 26.0...30.0  
1000 s: (23.0...33.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

#### APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,7 j 2  
Edition : 31.07.92  
Replaces : 08.91  
Test oil : ISO-4113

Combination no. : 0 402 046 825

Injection pump  
Pump designation : PES6P110A720LS3282  
EP type number : 0 412 016 736  
Governor  
Governor design. : RQ300/1100PA800-2  
Governor no. : 0 421 801 593

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM447 h

1st version kW : 157.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50  
: (4.35...4.55)  
Rack travel in mm : 19.00...21.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.10...13.20

Del.quantity cm3/ : 13.6...13.8

100 s: (13.3...14.0)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0  
Rack travel in mm : 9.0...9.3  
Del.quantity cm3/ : 1.4...2.0  
100 s: (1.1...2.3)  
Spread cm3 : 0.4  
100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 13.50...14.50

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1100  
Del.quantity : 136.0...138.0  
1000 : (133.5...140.5)  
Spread cm3 : 4.00  
1000 : (8.00)

## RATED SPEED

### 1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 14.0

Testing:

1st rack travel in: 12.10

Speed rpm : 1140...1150

2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1250  
Speed rpm : 0.00...2.40

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.3

#### Testing:

Speed rpm : 200  
Minimum rack trave: 8.80  
Speed rpm : 300  
Rack travel in mm : 7.20...7.40  
Rack travel in mm : 2.00  
Speed rpm : 370...410

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 600  
Del.quantity cm3/ : 113.0...116.0  
1000 s: (110.0...119.0)  
Spread cm3 : 5.00  
1000 s: (9.00)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 12.10  
Speed rpm : 1140...1150

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,7 j-3  
 Edition : 31.07.92  
 Replaces : 08.91  
 Test oil : ISO-4113  
 Combination no. : 0 402 046 826  
 Injection pump  
 Pump designation : PES6P110A720LS3282  
 EP type number : 0 412 016 736  
 Governor  
 Governor design. : RQ300/1100PA786-2  
 Governor no. : 0 421 801 576

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM447 h

1st version kW : 157.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50  
 : (4.35...4.55)  
 Rack travel in mm : 19.00...21.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1100  
 Rack travel in mm : 13.00...13.10  
 Del.quantity cm3/ : 13.6...13.8  
 100 s: (13.3...14.0)  
 Spread cm3 : 0.4  
 100 s: (0.8)

2nd speed rpm : 300.0  
 Rack travel in mm : 9.0...9.3  
 Del.quantity cm3/ : 1.4...2.0  
 100 s: (1.1...2.3)  
 Spread cm3 : 0.4  
 100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 600  
 Rack travel in mm : 13.50...14.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Del.quantity : 136.0...138.0  
 1000 : (133.5...140.5)  
 Spread cm3 : 4.00  
 1000 : (8.00)

## RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 600  
 Rack travel in mm : 14.0

Testing:  
 1st rack travel in: 12.00  
 Speed rpm : 1140...1150

2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1250  
Speed rpm : 0.00...2.40

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.3

#### Testing:

Speed rpm : 200  
Minimum rack travel: 8.80  
Speed rpm : 300  
Rack travel in mm : 7.20...7.40  
Rack travel in mm : 2.00  
Speed rpm : 370...410

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 113.0...116.0  
1000 s: (110.0...119.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (9.00)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 12.00  
Speed rpm : 1140...1150

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 9,8 q  
Edition : 23.10.92  
Replaces : 08.92  
Test oil : ISO-4113

Combination no. : 0 402 046 827

Injection pump  
Pump designation : PES6P120A320RS3284  
EP type number : 0 412 026 749  
Governor  
Governor design. : RQ275/1050PA999-3  
Governor no. : 0 421 801 598

Customer-spec. information  
Customer : RVI

Engine : MIDR/PR 062045

1st version kW : 186.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
: (3.45...3.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 10.10...10.20

Del.quantity cm3/ : 14.8...15.0

100 s: (14.5...15.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 4.6...5.0

Del.quantity cm3/ : 1.9...2.3

100 s: (1.6...2.6)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del.quantity : 148.0...150.0

1000 : (145.0...153.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.10

Speed rpm : 1130...1145

2nd rack travel in: 4.00

Speed rpm : 1200...1230  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 275  
Rack travel in mm : 5.3

#### Testing:

Speed rpm : 200  
Minimum rack travel: 6.30  
Speed rpm : 275  
Rack travel in mm : 4.70...4.90  
Rack travel in mm : 2.00  
Speed rpm : 320...360

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 700  
Rack travel in m: 10.50...10.60  
2nd speed rpm : 1050  
Rack travel in m: 10.40...10.60

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 10.10...10.20

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.00...8.10  
2nd pressure hPa : 200  
Rack travel in m: 8.50...8.60  
3rd pressure hPa : 360  
Rack travel in m: 9.40...9.80

#### START CUT-OUT

Speed 1/min : 195 (215)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 1050  
Del.quantity cm3/ : 146.0...152.0  
1000 s: (143.0...155.0)  
Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm3/ : 79.0...81.0  
1000 s: (76.0...84.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.10  
Speed rpm : 1130...1145

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 155.0...185.0  
1000 s: (151.0...189.0)

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 4.60...5.00  
Del.quantity cm3/ : 19.0...23.0  
1000 s: (16.0...26.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : SAK  
Edition : 26.06.92  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 046 834

Injection pump  
Pump designation : PES6P130A320RS3299  
EP type number : 0 412 036 706  
Governor  
Governor design. : RQV450...1500PA1023  
Governor no. : 0 421 813 985

Customer-spec. information  
Customer : SEATEK

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values —

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 6.00...6.10  
: (5.95...6.15)

Rack travel in mm : 10.00...11.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1500

Rack travel in mm : 10.70...10.80

Del.quantity cm<sup>3</sup>/ : 27.3...27.6

100 s: (27.3...27.6)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

2nd speed rpm : 450.0

Rack travel in mm : 3.2...3.6

Del.quantity cm<sup>3</sup>/ : 2.5...3.3

100 s: (2.1...3.5)

Spread cm<sup>3</sup> : 1.0

100 s: (1.4)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1500

travel mm : 8.10...8.30

2nd speed rpm : 450

travel mm : 0.80...1.20

3rd speed rpm : 700

travel mm : 2.80...3.40

4th speed rpm : 1050

travel mm : 4.60...5.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1700

Rack travel in mm : 7.70...10.30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1500

Aneroid pressure h: 900

Del.quantity : 273.0...276.0

1000 : (273.0...276.0)

Spread cm<sup>3</sup> : 6.00

1000 : (10.00)

## RATED SPEED

1st version

Control lever  
position degrees: 100...108

Testing:  
1st rack travel in: 9.70  
Speed rpm : 1540...1550  
2nd rack travel in: 4.00  
Speed rpm : 1640...1670  
4th rack travel in: 1750  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 65...73

Testing:  
Speed rpm : 100  
Minimum rack travel: 4.90  
Speed rpm : 450  
Rack travel in mm : 3.30...3.50

CONSTANT REGULATION  
Speed rpm : 450...550

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 700  
Pressure hPa : 900  
Rack travel mm : 10.70...10.80

Measurement  
Speed 1/min : 700

1st pressure hPa : -  
Rack travel in m: 7.00...7.20  
2nd pressure hPa : 450  
Rack travel in m: 8.70...8.80  
3rd pressure hPa : 390  
Rack travel in m: 7.90...8.10

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 157.0...160.0  
1000 s: (153.5...163.5)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.70

Speed rpm : 1540...1550

Remarks:

APPLICATION :

Navy

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC  
Edition : 15.06.93  
Replaces : 02.93  
Test oil : ISO-4113

Combination no. : 0 402 046 839

Injection pump  
Pump designation : PES6P100A320LS3306  
EP type number : 0 412 006 703  
Governor  
Governor design. : RQV350...1200PA1042  
-1K  
Governor no. : 0 421 815 322

Customer-spec. information  
Customer : NAVISTAR

Engine : DTA-466

1st version kW : 172.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 058

Inlet press., bar : 2.80

Overflow  
quantity min. 1/h: 240...260

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 2.95...3.05  
: (2.90...3.10)  
Rack travel in mm : 14.00...17.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 13.90...14.00

Del.quantity cm3/ : 15.5...15.7

100 s: (15.3...15.9)

Spread cm3 : 0.8

100 s: (1.2)

2nd speed rpm : 350.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 1.5...1.9

100 s: (1.3...2.2)

Spread cm3 : 0.4

100 s: (0.6)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 1.80...2.00

2nd speed rpm : 500  
travel mm : 3.50...3.90

3rd speed rpm : 800  
travel mm : 6.20...6.60

4th speed rpm : 1250  
travel mm : 9.30...9.50

5th speed rpm : 1400  
travel mm : 10.50...11.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1440

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 800  
Aneroid pressure h: 1200  
Del.quantity : 155.5...157.5  
1000 : (153.5...159.5)  
Spread cm3 : 8.00  
1000 : (12.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 116...124

Testing:  
1st rack travel in: 13.30  
Speed rpm : 1240...1270  
2nd rack travel in: 4.00  
Speed rpm : 1415...1425  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 74...82

Testing:  
Speed rpm : 275  
Minimum rack travel: 7.70  
Speed rpm : 350  
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION  
Speed rpm : 350...520

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 800  
Rack travel in m: 13.90...14.00  
2nd speed rpm : 1200  
Rack travel in m: 14.10...14.30  
3rd speed rpm : 650  
Rack travel in m: 13.30...13.70

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 1200  
Pressure hPa : 1200  
Rack travel mm : 14.10...14.30

Measurement  
Speed 1/min : 1200

1st pressure hPa : -

J27

Rack travel in m: 10.30...10.70  
2nd pressure hPa : 310  
Rack travel in m: 11.20...11.30  
3rd pressure hPa : 655  
Rack travel in m: 13.00...13.40

#### START CUT-OUT

Speed 1/min : 280 (290)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 1200  
Del.quantity cm3/ : 162.5...166.5  
1000 s: (160.5...168.5)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 800  
Del.quantity cm3/ : 70.5...74.5  
1000 s: (68.5...76.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.30  
Speed rpm : 1240...1270

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 120.0...160.0  
1000 s: (115.0...165.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.90...6.10  
Del.quantity cm3/ : 15.5...19.5  
1000 s: (13.0...22.0)  
Spread cm3 : 4.00  
1000 s: (6.50)

Remarks:

: NAVISTAR #1819914C91

Bow dimension:  
Sliding-sleeve position = 37.0 mm  
Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

Delivery-valve spring pre-tension =  
6.30...6.40 mm.  
Permissible alteration from 6.00...6.70  
mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC  
Edition : 15.06.93  
Replaces : 04.93  
Test oil : ISO-4113

Combination no. : 0 402 046 841

Injection pump  
Pump designation : PES6P100A320LS3309  
EP type number : 0 412 006 704  
Governor  
Governor design. : RQV350...1300PA1042  
-4K  
Governor no. : 0 421 815 328

Customer-spec. information  
Customer : NAVISTAR

Engine : DTA-408

1st version kW : 171.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 058

Inlet press., bar : 2.80

Overflow  
quantity min. 1/h: 175...195

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X3.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 2.95...3.05  
: (2.90...3.10)  
Rack travel in mm : 14.00...17.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.50...12.60

Del.quantity cm<sup>3</sup>/ : 14.4...14.6

100 s: (14.2...14.8)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

2nd speed rpm : 350.0

Rack travel in mm : 5.1...5.3

Del.quantity cm<sup>3</sup>/ : 1.4...1.8

100 s: (1.2...2.1)

Spread cm<sup>3</sup> : 0.4

100 s: (0.6)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 1.60...2.00

2nd speed rpm : 500  
travel mm : 3.80...4.20

3rd speed rpm : 800  
travel mm : 5.80...6.20

4th speed rpm : 1300  
travel mm : 8.90...9.10

5th speed rpm : 1500  
travel mm : 10.40...10.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 900  
Aneroid pressure h: 1200  
Del.quantity : 144.5...146.5  
1000 : (142.5...148.5)



Spread cm3 : 8.00  
1000 : (12.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 61...69

Testing:  
1st rack travel in: 11.90  
Speed rpm : 1340...1370  
2nd rack travel in: 4.00  
Speed rpm : 1510...1520  
4th rack travel in: 1650  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 16...24

Testing:  
Speed rpm : 275  
Minimum rack travel: 6.50  
Speed rpm : 350  
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION  
Speed rpm : 350...520

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 12.50...12.60  
2nd speed rpm : 1300  
Rack travel in m: 12.90...13.10  
3rd speed rpm : 700  
Rack travel in m: 11.80...12.20

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 1300  
Pressure hPa : 1200  
Rack travel mm : 12.90...13.10

Measurement  
Speed 1/min : 1300

1st pressure hPa : -  
Rack travel in m: 9.30...9.70  
2nd pressure hPa : 300  
Rack travel in m: 10.50...10.60  
3rd pressure hPa : 670  
Rack travel in m: 11.80...12.20

#### START CUT-OUT

Speed 1/min : 280 (290)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 1300  
Del.quantity cm3/ : 147.5...151.5  
1000 s: (145.5...153.5)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 900  
Del.quantity cm3/ : 75.5...79.5  
1000 s: (73.5...81.5)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.90  
Speed rpm : 1340...1370

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 120.0...160.0  
1000 s: (115.0...165.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.10...5.30  
Del.quantity cm3/ : 14.5...18.5  
1000 s: (12.0...21.0)  
Spread cm3 : 4.00  
1000 s: (6.50)

Remarks:  
: NAVISTAR #1819917C91

Limit shutoff stop screw to 1.0 mm.

Bow dimension:  
Sliding-sleeve position = 37.0 mm  
Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : NAV  
Edition : 15.06.93  
Replaces : 04.93  
Test oil : ISO-4113

Combination no. : 0 402 046 842

Injection pump  
Pump designation : PES6P100A320LS3309  
EP type number : 0 412 006 704  
Governor  
Governor design. : RQV350...1300PA1042  
-5K  
Governor no. : 0 421 815 329

Customer-spec. information  
Customer : NAVISTAR

Engine : DTA-408

1st version kW : 156.5  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 058

Inlet press., bar : 2.80

Overflow  
quantity min. 1/h: 240...260

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X3.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 2.95...3.05  
: (2.90...3.10)  
Rack travel in mm : 14.00...15.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.40...12.50

Del. quantity cm<sup>3</sup>/ : 14.3...14.5

100 s: (14.1...14.7)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

2nd speed rpm : 350.0

Rack travel in mm : 5.1...5.3

Del. quantity cm<sup>3</sup>/ : 1.4...1.8

100 s: (1.2...2.1)

Spread cm<sup>3</sup> : 0.4

100 s: (0.6)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 1.60...2.00

2nd speed rpm : 500

travel mm : 3.80...4.20

3rd speed rpm : 800

travel mm : 5.80...6.20

4th speed rpm : 1300

travel mm : 8.90...9.10

5th speed rpm : 1500

travel mm : 10.40...10.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 1200

Del. quantity : 143.5...145.5

1000 : (141.5...147.5)

Spread cm3 : 8.00  
1000 : (12.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 59...67

Testing:  
1st rack travel in: 11.80  
Speed rpm : 1340...1370  
2nd rack travel in: 4.00  
Speed rpm : 1510...1520  
4th rack travel in: 1650  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 16...24

Testing:  
Speed rpm : 275  
Minimum rack travel: 6.00  
Speed rpm : 350  
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION  
Speed rpm : 350...520

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 12.40...12.50  
2nd speed rpm : 1300  
Rack travel in m: 12.80...13.00  
3rd speed rpm : 700  
Rack travel in m: 11.80...12.20

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 1300  
Pressure hPa : 1200  
Rack travel mm : 12.80...13.00

Measurement  
Speed 1/min : 1300

1st pressure hPa : -  
Rack travel in m: 9.30...9.70  
2nd pressure hPa : 290  
Rack travel in m: 10.40...10.50  
3rd pressure hPa : 700  
Rack travel in m: 11.80...12.20

#### START CUT-OUT

Speed 1/min : 280 (290)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 1300  
Del.quantity cm3/ : 149.0...153.0  
1000 s: (147.0...155.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 900  
Del.quantity cm3/ : 75.5...79.5  
1000 s: (73.5...81.5)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.80  
Speed rpm : 1340...1370

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 120.0...160.0  
1000 s: (115.0...165.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.10...5.30  
Del.quantity cm3/ : 14.5...18.5  
1000 s: (12.0...21.0)  
Spread cm3 : 4.00  
1000 s: (6.50)

Remarks: : NAVISTAR #1819918C91

Limit shutoff stop screw to 1.0 mm.

Bow dimension:  
Sliding-sleeve position = 37.0 mm  
Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

Delivery-valve spring pre-tension =  
6.30...6.40 mm.  
Permissible alteration from 6.00...6.70

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC  
 Edition : 15.06.93  
 Replaces : 02.93  
 Test oil : ISO-4113  
 Combination no. : 0 402 046 845  
 Injection pump  
 Pump designation : PES6P100A320LS3309  
 EP type number : 0 412 006 704  
 Governor  
 Governor design. : RQV350...1300PA1042  
 -6K  
 Governor no. : 0 421 815 330

Customer-spec. information  
 Customer : NAVISTAR

Engine : DTA-408

1st version kW : 142.0  
 Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 058

Inlet press., bar : 2.80

Overflow  
 quantity min. 1/h: 240...260

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 2.95...3.05  
 : (2.90...3.10)  
 Rack travel in mm : 14.00...17.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.10...12.20

Del.quantity cm<sup>3</sup>/ : 13.2...13.4

100 s: (13.0...13.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

2nd speed rpm : 350.0

Rack travel in mm : 5.1...5.3

Del.quantity cm<sup>3</sup>/ : 1.4...1.8

100 s: (1.2...2.1)

Spread cm<sup>3</sup> : 0.4

100 s: (0.6)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
 travel mm : 1.60...2.00

2nd speed rpm : 500  
 travel mm : 3.80...4.20

3rd speed rpm : 800  
 travel mm : 5.80...6.20

4th speed rpm : 1300  
 travel mm : 8.90...9.10

5th speed rpm : 1500  
 travel mm : 10.40...10.80

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 1500

Rack travel in mm : 8.00...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 900  
Aneroid pressure h: 1200  
Del.quantity : 132.5...134.5  
1000 : (130.5...136.5)  
Spread cm3 : 8.00  
1000 : (12.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 112...120

Testing:  
1st rack travel in: 11.40  
Speed rpm : 1340...1370  
2nd rack travel in: 4.00  
Speed rpm : 1500...1510  
4th rack travel in: 1650  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 71...79

Testing:  
Speed rpm : 275  
Minimum rack travel: 6.70  
Speed rpm : 350  
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION  
Speed rpm : 350...520

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 12.10...12.20  
2nd speed rpm : 1300  
Rack travel in m: 12.40...12.60  
3rd speed rpm : 700  
Rack travel in m: 11.40...11.80

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 1300  
Pressure hPa : 1200  
Rack travel mm : 12.40...12.60

Measurement  
Speed 1/min : 1300

1st pressure hPa : -

K07

Rack travel in m: 9.40...9.80  
2nd pressure hPa : 250  
Rack travel in m: 10.30...10.40  
3rd pressure hPa : 300  
Rack travel in m: 11.60...12.00

#### START CUT-OUT

Speed 1/min : 280 (290)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 1300  
Del.quantity cm3/ : 139.0...143.0  
1000 s: (137.0...145.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 900  
Del.quantity cm3/ : 76.5...80.5  
1000 s: (74.5...82.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack travel: 11.40  
Speed rpm : 1340...1370

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 120.0...160.0  
1000 s: (115.0...165.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.10...5.30  
Del.quantity cm3/ : 14.5...18.5  
1000 s: (12.0...21.0)  
Spread cm3 : 4.00  
1000 s: (6.50)

Remarks:  
: NAVISTAR #1819922C91

Bow dimension:  
Sliding-sleeve position = 37.0 mm  
Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

Delivery-valve spring pre-tension =  
6.30...6.40 mm.  
Permissible alteration from 6.00...6.70  
mm



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE  
Edition : 15.06.93  
Replaces : 04.93  
Test oil : ISO-4113  
Combination no. : 0 402 076 059  
Injection pump  
Pump designation : PES6P110A720RS370  
EP type number : 0 412 016 052  
Governor  
Governor design. : RSV500...900POA455-5  
Governor no. : 0 421 833 400

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6619T F01

1st version kW : 200.0  
Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X3.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.75...2.85  
: (2.70...2.90)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 10.20...10.30

Del.quantity cm3/ : 12.3...12.5

100 s: (12.1...12.7)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 500.0

Rack travel in mm : 5.6...5.8

Del.quantity cm3/ : 1.5...1.9

100 s: (1.3...2.2)

Spread cm3 : 0.6

100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del.quantity : 123.5...125.5

1000 : (121.5...127.5)

Spread cm3 : 4.00

1000 : (6.50)

## RATED SPEED

1st version

Control lever

position degrees: 44...52

Testing:

1st rack travel in: 9.20

Speed rpm : 945...955  
2nd rack travel in: 4.00  
Speed rpm : 1040...1050  
3rd rack travel in: 4.00  
Speed rpm : 1045...1075  
4th rack travel in: 1200  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 30...38  
Setting point w/out bumper spring  
Speed rpm : 500  
Rack travel in mm : 5.2

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 500  
Rack travel in mm : 5.60...5.80

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 10.20...10.30  
2nd speed rpm : 650  
Rack travel in m: 10.80...11.00

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 138.5...142.5  
1000 s: (136.5...144.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.20  
Speed rpm : 945...955

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 180.0...200.0  
1000 s: (175.0...205.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 500  
Rack travel in mm : 5.60...5.80  
Del.quantity cm<sup>3</sup>/ : 15.5...19.5  
1000 s: (13.0...22.0)

Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: JOHN DEERE # AR88760  
Starting/full-load transition speed  
from holding magnet = 450 1/min.

Start-of-delivery mark is at 15°  
angular displacement of the cam after  
start of delivery at cylinder 1 with  
control-rod travel 9.00...12.00 mm



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE  
Edition : 15.06.93  
Replaces : 01.93  
Test oil : ISO-4113

Combination no. : 0 402 076 745

Injection pump  
Pump designation : PES6P120A720RS3203  
EP type number : 0 412 026 728  
Governor  
Governor design. : RSV625...1100P2A534  
-9  
Governor no. : 0 421 833 372

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6076 HZ 031

1st version kW : 205.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test Lines : 1 680 750 015

Outside diameter  
x Wall thickness : 6.00X3.00X600  
x Length mm

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65  
: (3.50...3.70)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.70...12.80

Del.quantity cm3/ : 17.4...17.6

100 s: (17.2...17.8)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 625.0

Rack travel in mm : 5.4...5.6

Del.quantity cm3/ : 2.7...3.1

100 s: (2.4...3.3)

Spread cm3 : 0.6

100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1200

Del.quantity : 174.5...176.5

1000 : (172.5...178.5)

Spread cm3 : 4.00

1000 : (6.50)

## RATED SPEED

1st version

Control Lever

position degrees: 42...50

Testing:

1st rack travel in: 11.70  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1205...1215  
3rd rack travel in: 4.00  
Speed rpm : 1195...1225  
4th rack travel in: 1350  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 22...30  
Setting point w/out bumper spring  
Speed rpm : 625  
Rack travel in mm : 5.0

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 625  
Rack travel in mm : 5.40...5.60

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 12.70...12.80  
2nd speed rpm : 700  
Rack travel in m: 13.30...13.50

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 13.30...13.50

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.60...11.80  
2nd pressure hPa : 645  
Rack travel in m: 12.10...12.20  
3rd pressure hPa : 840  
Rack travel in m: 12.90...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 700  
Del.quantity cm3/ : 187.0...191.0  
1000 s: (185.0...193.0)  
Aneroid pressure h: -  
Speed rpm : 800

Del.quantity cm3/ : 143.0...147.0  
1000 s: (141.0...149.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.70  
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 90.0...110.0  
1000 s: (85.0...115.0)  
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 625  
Rack travel in mm : 5.40...5.60  
Del.quantity cm3/ : 27.0...31.0  
1000 s: (24.5...33.5)  
Spread cm3 : 6.00  
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE47399

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Starting/full-load transition speed  
from holding magnet = 450 1/min.

Start-of-delivery mark at 10° cam  
rotation angle after start of delivery,  
cylinder 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE  
 Edition : 15.06.93  
 Replaces : 01.93  
 Test oil : ISO-4113  
 Combination no. : 0 402 076 754  
 Injection pump  
 Pump designation : PES6P120A720RS3203  
 EP type number : 0 412 026 728  
 Governor  
 Governor design. : RSV400...1100P2A534  
 -14  
 Governor no. : 0 421 833 405

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6076 HFO30

1st version kW : 205.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness : 6.00X3.00X600  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65  
 : (3.50...3.70)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100  
 Rack travel in mm : 12.50...12.60  
 Del. quantity cm3/ : 16.8...17.0  
 100 s: (16.6...17.2)  
 Spread cm3 : 0.4  
 100 s: (0.6)

2nd speed rpm : 400.0  
 Rack travel in mm : 5.2...5.4  
 Del. quantity cm3/ : 2.0...2.4  
 100 s: (1.8...2.6)  
 Spread cm3 : 0.6  
 100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 2.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Aneroid pressure h: 1200  
 Del. quantity : 168.0...170.0  
 1000 : (166.0...172.0)  
 Spread cm3 : 4.00  
 1000 : (6.50)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 36...44

#### Testing:

1st rack travel in: 11.50  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1185...1195  
3rd rack travel in: 4.00  
Speed rpm : 1185...1215  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 12...20  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 4.8

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.20...5.40

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100  
Rack travel in m: 12.50...12.60  
2nd speed rpm : 750  
Rack travel in m: 12.90...13.10

#### Aneroid/Altitude

##### Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 12.90...13.10

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.50...10.70  
2nd pressure hPa : 560  
Rack travel in m: 11.10...11.20  
3rd pressure hPa : 770  
Rack travel in m: 12.20...12.60

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 174.5...178.5  
1000 s: (172.5...180.5)  
Aneroid pressure h: -  
Speed rpm : 800

Del.quantity cm<sup>3</sup>/ : 117.5...121.5  
1000 s: (114.5...124.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.50  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 90.0...110.0  
1000 s: (85.0...115.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.20...5.40  
Del.quantity cm<sup>3</sup>/ : 20.0...24.0  
1000 s: (18.0...26.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: JOHN DEERE # RE47410

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Starting/full-load transition speed  
from holding magnet = 450 1/min.

Start-cf-delivery mark at 10° cam  
rotation angle after start of delivery,  
cylinder 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : NAV  
Edition : 15.06.93  
Replaces : 04.93  
Test oil : ISO-4113

Combination no. : 0 402 076 755

Injection pump  
Pump designation : PES6P110A320LS3318  
EP type number : 0 412 016 741  
Governor  
Governor design. : RSV350...750P4A561  
Governor no. : 0 421 833 406

Customer spec. information  
Customer : NAVISTAR

Engine : DTA-466

1st version kW : 185.0  
Rated speed : 1500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 058

Inlet press., bar : 2.80

Overflow  
quantity min. 1/h: 175...195

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x3.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05  
: (2.90...3.10)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.50...12.60

Del. quantity cm<sup>3</sup>/ : 20.8...21.0

100 s: (20.6...21.2)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

2nd speed rpm : 350.0

Rack travel in mm : 5.5...5.7

Del. quantity cm<sup>3</sup>/ : 3.8...4.2

100 s: (3.5...4.4)

Spread cm<sup>3</sup> : 0.4

100 s: (0.6)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del. quantity : 208.5...210.5

1000 : (206.5...212.5)

Spread cm<sup>3</sup> : 8.00

1000 : (12.00)

## RATED SPEED

1st version

Control lever

position degrees: 38...46

Testing:

1st rack travel in: 11.50  
Speed rpm : 765...775  
2nd rack travel in: 4.00  
Speed rpm : 800...810  
3rd rack travel in: 4.00  
Speed rpm : 805...815  
4th rack travel in: 900  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.6

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 350  
Rack travel in mm : 5.50...5.70

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.50  
Speed rpm : 765...775

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...175.0  
1000 s: (130.0...180.0)  
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.50...5.70  
Del.quantity cm3/ : 38.0...42.0  
1000 s: (35.5...44.5)  
Spread cm3 : 4.00  
1000 s: (6.50)

Remarks:

: NAVISTAR #1820271C91

APPLICATION

Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : NAV  
Edition : 15.06.93  
Replaces : 04.93  
Test oil : ISO-4113  
  
Combination no. : 0 402 076 755A  
  
Injection pump  
Pump designation : PES6P110A32OLS3318  
EP type number : 0 412 016 741  
Governor  
Governor design. : RSV350...750P4A561  
Governor no. : 0 421 833 406

Cust. part no. : 1820271C91A

Customer-spec. information  
Customer : NAVISTAR

Engine : DTA-466

1st version kW : 208.0  
Rated speed : 1500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 058

Inlet press., bar : 2.80

Overflow  
quantity min. 1/h: 175...195

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X3.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05  
: (2.90...3.10)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.50...12.60

Del.quantity cm<sup>3</sup>/ : 20.4...20.6

100 s: (20.2...20.8)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

2nd speed rpm : 350.0

Rack travel in mm : 5.5...5.7

Del.quantity cm<sup>3</sup>/ : 3.8...4.2

100 s: (3.5...4.4)

Spread cm<sup>3</sup> : 0.4

100 s: (0.6)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Del.quantity : 204.5...206.5

1000 : (202.5...208.5)

Spread cm<sup>3</sup> : 8.00

1000 : (12.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 45...53

### Testing:

1st rack travel in: 11.50  
Speed rpm : 915...925  
2nd rack travel in: 4.00  
Speed rpm : 940...950  
3rd rack travel in: 4.00  
Speed rpm : 945...955  
4th rack travel in: 1050  
Speed rpm : 0.30...1.40

## LOW IDLE 1

Control lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.6

### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 350  
Rack travel in mm : 5.50...5.70

## BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.50  
Speed rpm : 915...925

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...175.0  
1000 s: (130.0...180.0)  
Rack travel in mm : 20.00...21.00

## LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.50...5.70  
Del.quantity cm3/ : 38.0...42.0  
1000 s: (35.5...44.5)  
Spread cm3 : 4.00  
1000 s: (6.50)

## APPLICATION

Generator



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : NAV  
Edition : 15.06.93  
Replaces : 04.93  
Test oil : ISO-4113  
  
Combination no. : 0 402 076 756  
  
Injection pump  
Pump designation : PES6P100A320LS3317  
EP type number : 0 412 006 706  
Governor  
Governor design. : RSV350...1200P2A562  
Governor no. : 0 421 833 407

Customer-spec. information  
Customer : NAVISTAR

Engine : DTA-466

1st version kW : 204.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 058

Inlet press., bar : 2.80

Overflow  
quantity min. l/h: 175...195

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X3.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05  
: (2.90...3.10)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 14.60...14.70

Del.quantity cm3/ : 17.5...17.7

100 s: (17.3...17.9)

Spread cm3 : 0.8

100 s: (1.2)

2nd speed rpm : 350.0

Rack travel in mm : 4.8...5.0

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.4

100 s: (0.6)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 1500

Del.quantity : 175.5...177.5

1000 : (173.5...179.5)

Spread cm3 : 8.00

1000 : (12.00)

## RATED SPEED

1st version

Control lever  
position degrees: 53...61

Testing:

1st rack travel in: 13.60  
Speed rpm : 1245...1255  
2nd rack travel in: 4.00  
Speed rpm : 1315...1325  
3rd rack travel in: 4.00  
Speed rpm : 1320...1330  
4th rack travel in: 1400  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 14...22  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 4.9

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 350  
Rack travel in mm : 4.80...5.00

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1500  
Rack travel mm : 14.60...14.70

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 7.50...7.90  
2nd pressure hPa : 290  
Rack travel in m: 9.50...9.60  
3rd pressure hPa : 700  
Rack travel in m: 12.80...13.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 67.5...71.5  
1000 s: (65.5...73.5)

BREAKAWAY

1st version

K20

1mm rack travel less than

full load rack tr: 13.60  
Speed rpm : 1245...1255

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 125.0...165.0  
1000 s: (120.0...170.0)  
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 4.80...5.00  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 4.00  
1000 s: (6.50)

Remarks:

Delivery-valve spring pre-tension = 9091  
6.30...6.40 mm.  
Permissible alteration from 6.00...6.70  
mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : NAV  
Edition : 15.06.93  
Replaces : 04.93  
Test oil : ISO-4113  
  
Combination no. : 0 402 076 756A  
  
Injection pump  
Pump designation : PES6P100A320LS3317  
EP type number : 0 412 006 706  
Governor  
Governor design. : RSV350...1200P2A562  
Governor no. : 0 421 833 407

Cust. part no. : 1820269C91A

Customer-spec. information  
Customer : NAVISTAR

Engine : DTA-466

1st version kW : 185.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 058

Inlet press., bar : 2.80

Overflow  
quantity min. 1/h: 175...195

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness : 6.00X3.00X600  
x Length mm

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05  
                  : (2.90...3.10)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 13.90...14.00

Del. quantity cm<sup>3</sup>/ : 16.0...16.2

100 s: (15.8...16.4)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

2nd speed rpm : 350.0

Rack travel in mm : 4.8...5.0

Del. quantity cm<sup>3</sup>/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm<sup>3</sup> : 0.4

100 s: (0.6)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 1500

Del. quantity : 160.0...162.0

1000 : (158.0...164.0)

Spread cm<sup>3</sup> : 8.00

1000 : (12.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 53...61

### Testing:

1st rack travel in: 12.90  
Speed rpm : 1250...1260  
2nd rack travel in: 4.00  
Speed rpm : 1315...1325  
3rd rack travel in: 4.00  
Speed rpm : 1320...1330  
4th rack travel in: 14.00  
Speed rpm : 0.30...1.40

## LOW IDLE 1

Control lever  
position degrees: 14...22  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 4.9

### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 350  
Rack travel in mm : 4.80...5.00

Aneroid/Altitude  
Compensator Test

## 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1500  
Rack travel mm : 13.90...14.00

## Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 7.50...7.90  
2nd pressure hPa : 270  
Rack travel in m: 9.30...9.40  
3rd pressure hPa : 640  
Rack travel in m: 12.30...12.70

## FUEL DELIVERY CHARACTERISTICS

## 1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 67.5...71.5  
1000 s: (65.5...73.5)

## BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.90  
Speed rpm : 1250...1260

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 125.0...165.0  
1000 s: (120.0...170.0)  
Rack travel in mm : 20.00...21.00

## LOW IDLE

Speed rpm : 350  
Rack travel in mm : 4.80...5.00  
Del. quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 4.00  
1000 s: (6.50)

Delivery-valve spring pre-tension =  
6.30...6.40 mm. :  
Permissible alteration from 6.00...6.70  
mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : NAV  
Edition : 15.06.93  
Replaces : 04.93  
Test oil : ISO-4113  
  
Combination no. : 0 402 076 756B  
  
Injection pump  
Pump designation : PES6P100A320LS3317  
EP type number : 0 412 006 706  
Governor  
Governor design. : RSV350...1200P2A562  
Governor no. : 0 421 833 407

Cust. part no. : 1820269C91B

Customer-spec. information  
Customer : NAVISTAR

Engine : DTA-466

1st version kw : 156.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 058

Inlet press., bar : 2.80

Overflow  
quantity min. 1/h: 175...195

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X3.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05  
: (2.90...3.10)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 13.40...13.50

Del.quantity cm3/ : 14.7...14.9

100 s: (14.5...15.1)

Spread cm3 : 0.8

100 s: (1.2)

2nd speed rpm : 350.0

Rack travel in mm : 4.8...5.0

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.4

100 s: (0.6)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 1500

Del.quantity : 147.0...149.0

1000 : (145.0...151.0)

Spread cm3 : 8.00

1000 : (12.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 53...61

### Testing:

1st rack travel in: 12.40  
Speed rpm : 1255...1265  
2nd rack travel in: 4.00  
Speed rpm : 1315...1325  
3rd rack travel in: 4.00  
Speed rpm : 1320...1330  
4th rack travel in: 1400  
Speed rpm : 0.30...1.40

## LOW IDLE 1

Control lever  
position degrees: 14...22  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 4.9

### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 350  
Rack travel in mm : 4.90...5.00

Aneroid/Altitude  
Compensator Test

## 1st version

### Setting

Speed rpm : 500  
Pressure hPa : 1500  
Rack travel mm : 13.40...13.50

### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 7.50...7.90  
2nd pressure hPa : 260  
Rack travel in m: 9.20...9.30  
3rd pressure hPa : 600  
Rack travel in m: 12.00...12.40

## FUEL DELIVERY CHARACTERISTICS

## 1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 67.5...71.5  
1000 s: (65.5...73.5)

## BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.40  
Speed rpm : 1255...1265

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 125.0...165.0  
1000 s: (120.0...170.0)  
Rack travel in mm : 20.00...21.00

## LOW IDLE

Speed rpm : 350  
Rack travel in mm : 4.80...5.00  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 4.00  
1000 s: (6.50)

Delivery-valve spring pre-tension =  
6.30...6.40 mm. :  
Permissible alteration from 6.00...6.70  
mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : NAV  
Edition : 15.06.93  
Replaces : 04.93  
Test oil : ISO-4113

Combination no. : 0 402 076 756C

Injection pump  
Pump designation : PES6P100A320LS3317  
EP type number : 0 412 006 706  
Governor  
Governor design. : RSV350...1200P2A562  
Governor no. : 0 421 833 407

Cust. part no. : 1820269C91C

Customer-spec. information  
Customer : NAVISTAR

Engine : DTA-466

1st version kW : 145.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 058

Inlet press., bar : 2.80

Overflow  
quantity min. 1/h: 175...195

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X3.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05  
: (2.90...3.10)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 12.80...12.90

Del.quantity cm<sup>3</sup>/ : 13.5...13.7

100 s: (13.3...13.9)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

2nd speed rpm : 350.0

Rack travel in mm : 4.8...5.0

Del.quantity cm<sup>3</sup>/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm<sup>3</sup> : 0.4

100 s: (0.6)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 1500

Del.quantity : 135.0...137.0

1000 : (133.0...139.0)

Spread cm<sup>3</sup> : 8.00

1000 : (12.00)

## RATED SPEED

1st version  
Control Lever  
position degrees: 53...61

### Testing:

1st rack travel in: 11.80  
Speed rpm : 1260...1270  
2nd rack travel in: 4.00  
Speed rpm : 1315...1325  
3rd rack travel in: 4.00  
Speed rpm : 1320...1330  
4th rack travel in: 1400  
Speed rpm : 0.30...1.40

## LOW IDLE 1

Control Lever  
position degrees: 14...22  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 4.9

### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 350  
Rack travel in mm : 4.80...5.00

Aneroid/Altitude  
Compensator Test

## 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1500  
Rack travel mm : 12.80...12.90

### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 7.50...7.90  
2nd pressure hPa : 240  
Rack travel in m: 9.00...9.10  
3rd pressure hPa : 530  
Rack travel in m: 11.40...11.80

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 67.5...71.5  
1000 s: (65.5...73.5)

## BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.80  
Speed rpm : 1260...1270

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 125.0...165.0  
1000 s: (120.0...170.0)  
Rack travel in mm : 20.00...21.00

## LOW IDLE

Speed rpm : 350  
Rack travel in mm : 4.80...5.00  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 4.00  
1000 s: (6.50)

Delivery-valve spring pre-tension =  
6.30...6.40 mm. :  
Permissible alteration from 6.00...6.70  
mm



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : NAV  
Edition : 15.06.93  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 076 760

Injection pump  
Pump designation : PES6P100A320LS3317  
EP type number : 0 412 006 706  
Governor  
Governor design. : RSV415...1100P2A570  
Governor no. : 0 421 833 420

Customer-spec. information  
Customer : NAVISTAR

Engine : DT-531

1st version kW : 145.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 058

Inlet press., bar : 2.80

Overflow  
quantity min. 1/h: 250...270

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x3.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05  
: (2.90...3.10)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.40...12.50

Del.quantity cm3/ : 12.8...13.0

100 s: (12.6...13.2)

Spread cm3 : 0.8

100 s: (1.2)

2nd speed rpm : 415.0

Rack travel in mm : 4.9...5.1

Del.quantity cm3/ : 2.0...2.4

100 s: (1.8...2.7)

Spread cm3 : 0.4

100 s: (0.6)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1200

Del.quantity : 128.0...130.0

1000 : (126.0...132.0)

Spread cm3 : 8.00

1000 : (12.00)

## RATED SPEED

1st version

Control lever  
position degrees: 47...55

Testing:

1st rack travel in: 11.40  
Speed rpm : 1145...1155  
2nd rack travel in: 4.00  
Speed rpm : 1195...1205  
3rd rack travel in: 4.00  
Speed rpm : 1200...1210  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 16...24  
Setting point w/out bumper spring  
Speed rpm : 415  
Rack travel in mm : 5.0

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 415  
Rack travel in mm : 4.90...5.10

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 13.10...13.20

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.00...8.40  
2nd pressure hPa : 280  
Rack travel in m: 9.40...9.50  
3rd pressure hPa : 520  
Rack travel in m: 11.40...11.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 74.5...78.5  
1000 s: (72.5...80.5)

BREAKAWAY

1st version

K28

1mm rack travel less than

full load rack tr: 11.40  
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 125.0...165.0  
1000 s: (120.0...170.0)  
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 415  
Rack travel in mm : 4.90...5.10  
Del.quantity cm<sup>3</sup>/ : 20.5...24.5  
1000 s: (18.0...27.0)  
Spread cm<sup>3</sup> : 4.00  
1000 s: (6.50)

Remarks:

Delivery-valve spring pre-tension = 4091  
6.30...6.40 mm.  
Permissible alteration from 6.00...6.70  
mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : NAV  
Edition : 02.07.93  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 076 761  
  
Injection pump  
Pump designation : PES6P100A320LS3317  
EP type number : 0 412 006 706  
Governor  
Governor design. : RSV415...1100P2A571  
Governor no. : 0 421 833 421

Customer-spec. information  
Customer : NAVISTAR

Engine : DT-531

1st version kW : 161.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 058

Inlet press., bar : 2.80

Overflow  
quantity min. 1/h: 250...270

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Lube oil : 6

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x3.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

L01

Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05  
: (2.90...3.10)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
Phasing :  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100  

---

Rack travel in mm : 13.10...13.20  

---

Del.quantity cm3/ : 14.4...14.6  
100 s: (14.2...14.8)  

---

Spread cm3 : 0.8  
100 s: (1.2)

2nd speed rpm : 415.0  
Rack travel in mm : 4.9...5.1  
Del.quantity cm3/ : 2.0...2.4  
100 s: (1.8...2.7)  
Spread cm3 : 0.4  
100 s: (0.6)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : 5.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Aneroid pressure h: 1200  
Del.quantity : 144.0...146.0  
1000 : (142.0...148.0)  
Spread cm3 : 8.00  
1000 : (12.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 48...56

Testing:

1st rack travel in: 12.10  
Speed rpm : 1145...1155  
2nd rack travel in: 4.00  
Speed rpm : 1195...1205  
3rd rack travel in: 4.00  
Speed rpm : 1200...1210  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 17...25  
Setting point w/out bumper spring  
Speed rpm : 415  
Rack travel in mm : 5.0

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 415  
Rack travel in mm : 4.90...5.10

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 13.10...13.20

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 8.00...8.40

2nd pressure hPa : 300

Rack travel in m: 9.40...9.50

3rd pressure hPa : 590

Rack travel in m: 11.80...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 74.5...78.5

1000 s: (72.5...80.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.10

L02

Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 125.0...165.0

1000 s: (120.0...170.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 415

Rack travel in mm : 4.90...5.10

Del.quantity cm<sup>3</sup>/ : 20.5...24.5

1000 s: (18.0...27.0)

Spread cm<sup>3</sup> : 4.00

1000 s: (6.50)

Remarks:

: NAVISTAR #1817593C91

Delivery-valve spring pre-tension =  
6.30...6.40 mm.

Permissible alteration from 6.00...6.70  
mm

APPLICATION

Tractor (tractor engines)

## Note remarks

Combination no. : 0 402 640 817

Customer-spec. information  
Customer : MERCEDES-BENZ

1st version kW : 736.0  
Rated speed : 2300

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 150...170

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0.8

Test Lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values

Test pressure, bar: 25...27

```
Prestroke mm      : 4.40...4.50
                   : (4.35...4.55)
Rack travel in mm : 19.00...21.00
Firing order      : 12- 1- 5- 9- 8- 3-
                   : 4- 11- 10- 2- 6- 7
```

Phasing : 0-45-60-105-120-165-  
180-225-240-285-300-  
345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

1st speed rpm : 1150

Rack travel in mm : 15.10...15.20

Del.quantity cm3/ : 30.9...31.1

100 s: (30.6...31.4)

Spread      cm<sup>3</sup> : 0.6

100 s; (1.0)

```

2nd speed      rpm : 350.0
Rack travel in mm : 5.3...5.9
Del.quantity cm3/ : 1.6...2.2
                100 s: (1.3...2.5)
Spread         cm3 : 0.8
                100 s: (1.2)

```

(B) Setting of injection pump  
with governor

1st speed	rpm	: 350
travel mm		: 1.30...1.80
2nd speed	rpm	: 600
travel mm		: 3.30...3.80
3rd speed	rpm	: 960
travel mm		: 5.30...5.80
4th speed	rpm	: 1206
travel mm		: 7.90...8.40
5th speed	rpm	: 1291
travel mm		: 9.80...10.30

```
Control-lever position
Degree: -1
Speed      rpm : 1275
Rack travel in mm : 15.20...17.80
```

# FULL LOAD DELIV. AT FULL LOAD STOP

## 1st version

Speed rpm : 1150  
 Aneroid pressure h: 1800  
 Del.quantity : 309.0...311.0  
 1000 : (306.0...314.0)  
 Spread cm<sup>3</sup> : 6.00  
 1000 : (10.00)

## 2nd version

Speed rpm : 1150  
 Aneroid pressure h: 1800  
 Del.quantity cm<sup>3</sup>/ : 309.0...311.0  
 1000 s: (306.0...314.0)  
 Spread cm<sup>3</sup> : 6.00  
 1000 s: (10.0)

## RATED SPEED

### 1st version

Control lever  
 position degrees: 113...121

### Testing:

1st rack travel in: 14.20  
 Speed rpm : 1190...1200  
 2nd rack travel in: 4.00  
 Speed rpm : 1270...1300  
 4th rack travel in: 1350  
 Speed rpm : 0.00...1.00

### 2nd version

Control lever  
 position degrees: 113...121

### Testing:

1st rack travel in: 14.20  
 Speed rpm : 1190...1200  
 2nd rack travel in: 4.00  
 Speed rpm : 1270...1300  
 4th rack travel in: 1350  
 Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
 position degrees: 62...70

### Testing:

Speed rpm : 250  
 Minimum rack travel: 7.30  
 Speed rpm : 350  
 Rack travel in mm : 5.30...5.90

## CONSTANT REGULATION

Speed rpm : 350...600

Aneroid/Altitude  
 Compensator Test

## 1st version

Setting  
 Speed rpm : 500  
 Pressure hPa : -  
 Rack travel mm : 8.30...8.60

## Measurement

Speed 1/min : 500

1st pressure hPa : 400  
 Rack travel in m: 10.00...10.10  
 2nd pressure hPa : 1050  
 Rack travel in m: 14.10...14.30

## 2th version

Setting  
 Speed rpm : 500  
 Pressure hPa : -  
 Rack travel in mm : 8.20...8.50

## Measurement

Speed rpm : 500

1st pressure hPa : 300  
 Rack travel in m: 9.80...9.90  
 2nd pressure hPa : 1100  
 Rack travel in m: 14.0...14.2

## START CUT-OUT

Speed 1/min : 310 (330)

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 1800  
 Speed rpm : 750  
 Del.quantity cm<sup>3</sup>/ : 303.0...313.0  
 1000 s: (300.0...316.0)  
 Spread cm<sup>3</sup> : 10.00  
 1000 s: (15.0)

Aneroid pressure h: 1800  
 Speed rpm : 1150  
 Del.quantity cm<sup>3</sup>/ : 240.0...243.0 \*  
 1000 s: (237.0...246.0)  
 Spread cm<sup>3</sup> : 10.00  
 1000 s: (15.0)

Aneroid pressure h: -  
 Speed rpm : 500  
 Del.quantity cm<sup>3</sup>/ : 128.0...130.0  
 1000 s: (125.0...133.0)  
 Spread cm<sup>3</sup> : 10.00  
 1000 s: (15.0)

### 2nd version

Aneroid pressure h: 1800  
 Speed rpm : 750  
 Del.quantity cm<sup>3</sup>/ : 303.0...313.0  
 1000 s: (300.0...316.0)

Spread cm<sup>3</sup> : 10.00  
1000 s: (15.0)  
Aneroid pressure h: 1800  
Speed rpm : 1150  
Del.quantity cm<sup>3</sup>/ : 240.0...243.0 \*  
1000 s: (237.0...246.0)  
Spread cm<sup>3</sup> : 10.00  
1000 s: (15.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 128.0...130.0  
1000 s: (125.0...133.0)  
Spread cm<sup>3</sup> : 10.00  
1000 s: (15.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 14.20  
Speed rpm : 1190...1200

2nd version  
1mm rack travel less than  
full load rack tr: 14.20  
Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 330.0...350.0  
1000 s: (326.0...354.0)

#### Remarks:

Values of version 1 only apply to regulators with LDA spring 2 424 619 162.

\* = Set at reduced-delivery stop.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 22,0 c 2  
 Edition : 31.07.92  
 Replaces : 04.92  
 Test oil : ISO-4113  
 Combination no. : 0 402 640 828  
 Injection pump  
 Pump designation : PE12P120A520LS7826  
 EP type number : 0 412 620 817  
 Governor  
 Governor design. : RQV350...1050PA870  
 -13  
 Governor no. : 0 421 813 934

Customer spec. information  
 Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kW : 620.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 150...170

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50  
 : (4.35...4.55)  
 Rack travel in mm : 19.00...21.00  
 Firing order : 12- 1- 5- 9- 8- 3-  
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
 180-225-240-285-300-  
 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

## BASIC SETTING

1st speed rpm : 1050  
 Rack travel in mm : 14.00...14.10  
 Del.quantity cm3/ : 27.4...27.6  
 100 s: (27.1...27.9)

Spread cm3 : 0.6  
 100 s: (1.0)

2nd speed rpm : 350.0  
 Rack travel in mm : 5.3...5.9  
 Del.quantity cm3/ : 1.6...2.2  
 100 s: (1.3...2.5)  
 Spread cm3 : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
 travel mm : 1.30...1.80  
 2nd speed rpm : 570  
 travel mm : 3.30...3.80  
 3rd speed rpm : 900  
 travel mm : 5.40...5.90  
 4th speed rpm : 1107  
 travel mm : 7.80...8.30  
 5th speed rpm : 1204  
 travel mm : 9.80...10.30

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1150  
 Rack travel in mm : 15.20...17.80



# FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050  
Aneroid pressure h: 1800  
Del.quantity : 274.0...276.0  
1000 : (271.0...279.0)  
Spread cm3 : 6.00  
1000 : (10.00)

## RATED SPEED

1st version

Control lever  
position degrees: 114...122

Testing:

1st rack travel in: 13.00  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 59...67

Testing:

Speed rpm : 250  
Minimum rack trave: 7.30  
Speed rpm : 350  
Rack travel in mm : 5.50...5.70

## CONSTANT REGULATION

Speed rpm : 350...600

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 8.00...8.30

Measurement

Speed 1/min : 500

1st pressure hPa : 300  
Rack travel in m: 9.40...9.50  
2nd pressure hPa : 900  
Rack travel in m: 12.70...12.90

## START CUT-OUT

Speed 1/min : 310 (330)

L07

# FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1800  
Speed rpm : 750  
Del.quantity cm3/ : 268.0...272.0  
1000 s: (265.0...275.0)  
Spread cm3 : 10.00  
1000 s: (15.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 124.0...126.0  
1000 s: (121.0...129.0)  
Spread cm3 : 10.00  
1000 s: (15.0)

## BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00  
Speed rpm : 1090...1100

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 330.0...350.0  
1000 s: (326.0...354.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : SCA  
Edition : 22.01.93  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 646 600  
  
Injection pump  
Pump designation : PE6P120A72DRS7022  
EP type number : 0 412 626 873  
Governor  
Governor design. : RQV200...1000PA539  
-14  
Governor no. : 0 421 814 011

Customer-spec. information  
Customer : SCANIA

Engine : DS11 76

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 417 413 025  
  
Inlet press., bar : 1.50  
  
Test nozzle holder  
assembly : 1 688 901 104  
  
Opening  
pressure, bar : 250...253  
  
Orifice plate  
diameter mm : 0,7  
  
Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50  
: (4.35...4.55)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 10.90...11.00

Del.quantity cm3/ : 16.8...17.0

100 s: (16.5...17.3)

Spread cm3 : 0.8

100 s: (1.2)

2nd speed rpm : 250.0

Rack travel in mm : 4.6...5.0

Del.quantity cm3/ : 1.5...1.9

100 s: (1.2...2.2)

Spread cm3 : 0.4

100 s: (0.8)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 225

travel mm : 1.20...1.60

2nd speed rpm : 350

travel mm : 2.40...3.00

3rd speed rpm : 650

travel mm : 4.50...5.10

4th speed rpm : 1045

travel mm : 8.40...8.60

5th speed rpm : 1150

travel mm : 9.80...10.20

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1050

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 700

Aneroid pressure h: 1500

Del.quantity : 168.0...170.0

1000 : (165.0...173.0)

Spread cm<sup>3</sup> : 8.00  
1000 : (12.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 112...120

Testing:  
1st rack travel in: 9.90  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1115...1145  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 63...71

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.20  
Speed rpm : 250  
Rack travel in mm : 4.60...4.80  
Rack travel in mm : 2.00  
Speed rpm : 390...450

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1500  
Rack travel mm : 10.90...11.00

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.90...10.30  
2nd pressure hPa : 390  
Rack travel in m: 10.60...10.70  
3rd pressure hPa : 340  
Rack travel in m: 10.20...10.40

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1500  
Speed rpm : 1000  
Del.quantity cm<sup>3</sup>/ : 166.0...174.0  
1000 s: (164.0...176.0)  
Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 142.0...146.0  
1000 s: (140.0...148.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.90  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 9.90...10.30

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.60...4.80

#### Remarks:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring  
preload on new delivery-valve holders  
to 2.9...3.1 mm.

Start-of-delivery setting with R080  
diaphragm.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : SCA  
 Edition : 22.01.93  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 646 604  
 Injection pump  
 Pump designation : PE6P120A72ORS7188  
 EP type number : 0 412 626 832  
 Governor  
 Governor design. : RQV350...1050PA795  
 -13  
 Governor no. : 0 421 814 017

Customer spec. information  
 Customer : SCANIA

Engine : DS11 Allvarv

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 104  
 Opening  
 pressure, bar : 250...253  
 Orifice plate  
 diameter mm : 0,7  
 Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 4.40...4.50  
 : (4.35...4.55)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700  
 Rack travel in mm : 13.30...13.40  
 Del.quantity cm3/ : 23.5...23.7  
 100 s: (23.2...24.0)  
 Spread cm3 : 0.8  
 100 s: (1.2)  
 2nd speed rpm : 350.0  
 Rack travel in mm : 4.6...5.0  
 Del.quantity cm3/ : 2.0...2.6  
 100 s: (-)  
 Spread cm3 : 0.4  
 100 s: (0.8)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
 travel mm : 1.20...1.60  
 2nd speed rpm : 650  
 travel mm : 4.10...4.70  
 3rd speed rpm : 1095  
 travel mm : 7.30...7.50  
 4th speed rpm : 1240  
 travel mm : 8.60...9.00

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1280  
 Rack travel in mm : 11.00...13.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700  
 Aneroid pressure h: 1500  
 Del.quantity : 235.0...237.0  
 1000 : (232.0...240.0)  
 Spread cm3 : 8.00  
 1000 : (12.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 98...106

### Testing:

1st rack travel in: 13.10  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1215...1245  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 68...76

### Testing:

Speed rpm : 100  
Minimum rack travel: 10.00  
Speed rpm : 350  
Rack travel in mm : 4.60...4.80  
Rack travel in mm : 2.00  
Speed rpm : 375...435

## Aneroid/Altitude Compensator Test

### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1500  
Rack travel mm : 13.30...13.40

### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.20...10.60  
2nd pressure hPa : 440  
Rack travel in m: 12.00...12.10  
3rd pressure hPa : 270  
Rack travel in m: 10.90...11.10

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 1500  
Speed rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 207.0...215.0  
1000 s: (205.0...218.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 152.0...154.0  
1000 s: (148.0...156.0)

## BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.10  
Speed rpm : 1090...1100

## STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 13.30...13.40

## LOW IDLE

Speed rpm : 350  
Rack travel in mm : 4.60...4.80

Remarks:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring  
preload on new delivery-valve holders  
to 2.9...3.1 mm.

Start-of-delivery setting with ROBO  
diaphragm.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 27.11.92  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 646 791  
Injection pump  
Pump designation : PE6P120A320LS7864  
EP type number : 0 412 626 879  
Governor  
Governor design. : RQV350...1050PA1052  
-1  
Governor no. : 0 421 814 041

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.00...13.10

Del.quantity cm3/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.5...6.1

Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 1.00...1.50

2nd speed rpm : 453

travel mm : 2.30...2.80

3rd speed rpm : 770

travel mm : 4.70...5.20

4th speed rpm : 1108

travel mm : 9.40...9.90

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1180

Rack travel in mm : 10.40...13.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del.quantity : 229.0...231.0  
1000 : (226.0...234.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 98...106

#### Testing:

1st rack travel in: 11.70  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1145...1175  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 64...72

#### Testing:

Speed rpm : 250  
Minimum rack trave: 8.80  
Speed rpm : 350  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 430...470

#### CONSTANT REGULATION

Speed rpm : 380...500

#### TORQUE CONTROL

Dimension a mm : 0.40  
Torque control curve - 1st version  
1st speed rpm : 700  
Rack travel in m: 13.00...13.10  
2nd speed rpm : 1050  
Rack travel in m: 12.60...12.80  
3rd speed rpm : 850  
Rack travel in m: 12.90...13.10

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.00...10.30

#### Measurement

Speed 1/min : 500

1st pressure hPa : 300  
Rack travel in m: 10.70...10.80  
2nd pressure hPa : 650

Rack travel in m: 12.40...12.60

#### START CUT-OUT

Speed 1/min : 270 (290)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 1050  
Del.quantity cm3/ : 216.0...220.0  
1000 s: (213.0...223.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1000  
Speed rpm : 1050  
Del.quantity cm3/ : 162.0...166.0 \*  
1000 s: (159.0...169.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 134.0...136.0  
1000 s: (131.0...139.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 11.70  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 240.0...260.0  
1000 s: (236.0...264.0)

Remarks:

\* = Set at reduced-delivery stop.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 27.11.92  
Replaces : 10.92  
Test oil : ISO-4113  
  
Combination no. : 0 402 646 799  
  
Injection pump  
Pump designation : PE6P120A320LS7852  
EP type number : 0 412 626 871  
Governor  
Governor design. : RQ300/950PA1031-5  
Governor no. : 0 421 801 657

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 250.0  
Rated speed : 1900  
2nd version kW : 250  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.00...14.10

Del.quantity cm3/ : 23.4...23.6

100 s: (23.1...23.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...6.2

Del.quantity cm3/ : 1.6...2.2  
100 s: (1.3...2.5)

Spread cm3 : 0.6  
100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1100

Del.quantity : 234.0...236.0  
1000 : (231.0...239.0)

Spread cm3 : 5.00  
1000 : (9.00)

2nd version

Speed rpm : 600

Aneroid pressure h: 1100



Del.quantity cm<sup>3</sup>/ : 234.0...236.0  
1000 s: (231.0...239.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (9.00)

#### RATED SPEED

##### 1st version

##### Setting point:

Speed rpm : 600  
Rack travel in mm : 20.0

##### Testing:

1st rack travel in: 13.00  
Speed rpm : 990...1005  
2nd rack travel in: 4.00  
Speed rpm : 1070...1100  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

##### 2nd version

##### Setting point:

Speed rpm : 600  
Rack travel in mm : 20.0

##### Testing:

1st rack travel in: 13.00  
Speed rpm : 990...1005  
2nd rack travel in: 4.00  
Speed rpm : 1070...1100  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

##### Setting point w/out bumper spring

Speed rpm : 300  
Rack travel in mm : 5.9

##### Testing:

Speed rpm : 200  
Minimum rack travel: 8.10  
Speed rpm : 300  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 380...420

#### Aneroid/Altitude Compensator Test

##### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.10...10.40

##### Measurement

Speed 1/min : 500

L15

1st pressure hPa : 250  
Rack travel in m: 11.00...11.10  
2nd pressure hPa : 550  
Rack travel in m: 13.00...13.20

##### 2th version

##### Setting

Speed rpm : 500  
Pressure hPa : -  
Rack travel in mm : 10.1...10.4

##### Measurement

Speed rpm : 500

1st pressure hPa : 300  
Rack travel in m: 10.8...10.9  
2nd pressure hPa : 700  
Rack travel in m: 12.9...13.1

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 1100  
Speed rpm : 950  
Del.quantity cm<sup>3</sup>/ : 228.0...232.0  
1000 s: (225.0...235.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 132.0...134.0  
1000 s: (129.0...137.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

##### 2nd version

Aneroid pressure h: 1100  
Speed rpm : 950  
Del.quantity cm<sup>3</sup>/ : 228.0...232.0  
1000 s: (225.0...235.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 132.0...134.0  
1000 s: (129.0...137.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 13.00  
Speed rpm : 990...1005

2nd version  
1mm rack travel less than  
full load rack tr: 13.00  
Speed rpm : 990...1005

Values of version 1 only apply to regu-  
lators with LDA spring 2 424 619 162.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 30.04.92  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 646 840  
  
Injection pump  
Pump designation : PE6P120A320LS7808-11  
EP type number : 0 412 626 851  
Governor  
Governor design. : RQ325/1050PA762-3  
Governor no. : 0 421 801 381

Customer spec. information  
Customer : DAIMLER-BENZ

Engine : OM441 LA

1st version kW : 240.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
: (3.95...4.15)  
Rack travel in mm : 20.00...21.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-45-120-165-240-285

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.50...14.70

Del.quantity cm3/ : 20.9...21.1  
100 s: (20.6...21.4)

Spread cm3 : 0.5  
100 s: (0.9)

2nd speed rpm : 325.0  
Rack travel in mm : 6.4...6.6  
Del.quantity cm3/ : 1.6...2.2  
100 s: (1.3...2.5)  
Spread cm3 : 0.6  
100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -2  
Speed rpm : 600  
Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 600  
Aneroid pressure h: 800  
Del.quantity : 209.0...211.0  
1000 : (206.0...214.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
  
Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:

1st rack travel in: 14.40  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1195...1225  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 6.5

Testing:

Speed rpm : 100  
Minimum rack travel: 8.00  
Speed rpm : 325  
Rack travel in mm : 6.40...6.60  
Rack travel in mm : 2.00  
Speed rpm : 405...445

TORQUE CONTROL

Dimension a mm : 0.30  
2nd speed rpm : 1050  
Rack travel in m: 15.40...15.60  
3rd speed rpm : 800  
Rack travel in m: 15.70...15.90  
4th speed rpm : 700

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 800  
Rack travel mm : 14.50...14.70

Measurement

Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 12.20...12.40  
2nd pressure hPa : 450  
Rack travel in m: 13.30...13.50  
3rd pressure hPa : 900  
Rack travel in m: 14.60...14.70 \*  
4th pressure hPa : 1100  
Rack travel in m: 13.30...13.50  
5th pressure hPa : -  
Rack travel in m: 11.30...11.50

START CUT-OUT

Speed 1/min : 245 (265)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1300  
Speed rpm : 1050  
Del.quantity cm3/ : 231.0...234.0  
1000 s: (228.0...237.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1300  
Speed rpm : 800  
Del.quantity cm3/ : 234.0...238.0  
1000 s: (231.0...241.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 133.0...135.0  
1000 s: (130.0...138.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.40  
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 190.0...210.0  
1000 s: (186.0...214.0)

Remarks:

\* Increase in control-rod travel with  
respect to setting at least 0.1 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 30.04.92  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 646 843

Injection pump  
Pump designation : PE6P120A320LS7808-10  
EP type number : 0 412 626 850  
Governor  
Governor design. : RGV300...1050PA797-2  
Governor no. : 0 421 813 614

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 240.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.90...14.10

Del. quantity cm3/ : 21.4...21.6

100 s: (21.1...21.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...6.2

Del. quantity cm3/ : 1.3...1.9

100 s: (1.0...2.2)

Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.20...1.40

2nd speed rpm : 600

travel mm : 4.90...5.10

3rd speed rpm : 1075

travel mm : 7.40...7.60

4th speed rpm : 1100

travel mm : 8.00...8.40

5th speed rpm : 1150

travel mm : 9.00...9.40

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1125

Rack travel in mm : 15.80...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 600  
Aneroid pressure h: 900  
Del.quantity : 214.0...216.0  
1000 : (211.0...219.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 121...129

Testing:  
1st rack travel in: 13.80  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 81...89

Testing:  
Speed rpm : 200  
Minimum rack travel: 7.90  
Speed rpm : 300  
Rack travel in mm : 5.60...6.20

CONSTANT REGULATION  
Speed rpm : 300...450

TORQUE CONTROL  
Dimension a mm : 0.30  
2nd speed rpm : 1050  
Rack travel in m: 14.80...15.00  
3rd speed rpm : 800  
Rack travel in m: 15.00...15.20  
4th speed rpm : 700

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 900  
Rack travel mm : 13.90...14.10

Measurement  
Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 10.70...10.90  
2nd pressure hPa : 550  
Rack travel in m: 12.90...13.10

3rd pressure hPa : 1050  
Rack travel in m: 14.00...14.10 \*  
4th pressure hPa : 1150  
Rack travel in m: 14.40...14.60  
5th pressure hPa : -  
Rack travel in m: 9.50...9.80

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1450  
Speed rpm : 1050  
Del.quantity cm3/ : 231.0...234.0  
1000 s: (228.0...237.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1450  
Speed rpm : 800  
Del.quantity cm3/ : 237.0...241.0  
1000 s: (234.0...244.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 142.0...144.0  
1000 s: (139.0...147.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.80  
Speed rpm : 1095...1110

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 200.0...220.0  
1000 s: (196.0...224.0)

Remarks:

\* Increase in control-rod travel with  
respect to setting at least 0.1 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : SCA 11,1 r  
Edition : 16.07.93  
Replaces : 06.93  
Test oil : ISO-4113  
  
Combination no. : 0 402 646 887  
  
Injection pump  
Pump designation : PE6P120A720RS7188  
EP type number : 0 412 626 832  
Governor  
Governor design. : RQV200...950PA725-7  
Governor no. : 0 421 813 803

Customer-spec. information  
Customer : SCANIA

Engine : DSC 11 23

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 417 413 025  
  
Inlet press., bar : 2.50  
  
Overflow  
quantity min. 1/h: 170...210  
  
Test nozzle holder  
assembly : 1 688 901 104  
  
Opening  
pressure, bar : 250...253  
  
Orifice plate  
diameter mm : 0,7  
  
Test lines : 1 680 750 008  
  
Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 4.45...4.55  
: (4.40...4.60)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700  
  
Rack travel in mm : 13.80...13.90  
  
Del.quantity cm3/ : 25.1...25.3  
100 s: (24.8...25.6)

Spread cm3 : 0.8  
100 s: (1.2)

2nd speed rpm : 250.0  
Rack travel in mm : 4.6...5.0  
Del.quantity cm3/ : 1.3...1.9  
100 s: (1.0...2.2)  
Spread cm3 : 0.4  
100 s: (0.8)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 225  
travel mm : 1.20...1.60  
2nd speed rpm : 350  
travel mm : 2.40...3.00  
3rd speed rpm : 650  
travel mm : 4.50...5.10  
4th speed rpm : 1045  
travel mm : 8.40...8.60  
5th speed rpm : 1125  
travel mm : 9.30...9.70

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1150  
Rack travel in mm : 7.00...12.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 700  
Aneroid pressure h: 1500

Del.quantity : 251.0...253.0  
1000 : (248.0...256.0)  
Spread cm3 : 8.00  
1000 : (12.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 110...118

Testing:  
1st rack travel in: 12.80  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1110...1140  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 60...68

Testing:  
Speed rpm : 150  
Minimum rack travel: 6.00  
Speed rpm : 250  
Rack travel in mm : 4.60...4.80  
Rack travel in mm : 2.00  
Speed rpm : 370...430

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1500  
Rack travel mm : 13.80...13.90

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.20...10.60  
2nd pressure hPa : 440  
Rack travel in m: 12.00...12.10  
3rd pressure hPa : 270  
Rack travel in m: 10.90...11.10

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1500  
Speed rpm : 950  
Del.quantity cm3/ : 233.0...241.0  
1000 s: (231.0...243.0)  
Aneroid pressure h: -

Speed rpm : 500  
Del.quantity cm3/ : 152.0...154.0  
1000 s: (149.0...157.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.80  
Speed rpm : 990...1000

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 145.0...185.0  
1000 s: (141.0...189.0)  
Rack travel in mm : 10.20...10.60

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.60...4.80

Remarks:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring  
preload on new delivery-valve holders  
to 2.9...3.1 mm.

Start-of-delivery setting with ROBO  
diaphragm.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 30.04.92  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 646 897

Injection pump  
Pump designation : PE6P120A320LS7808-10  
EP type number : 0 412 626 850  
Governor  
Governor design. : PQ300/950PA762-10  
Governor no. : 0 421 801 511

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 249.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.90...14.10

Del.quantity cm3/ : 21.4...21.6

100 s: (21.1...21.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.7...6.0

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 900

Del.quantity : 214.0...216.0

1000 : (211.0...219.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:  
1st rack travel in: 13.80  
Speed rpm : 990...1005  
2nd rack travel in: 4.00  
Speed rpm : 1065...1095  
4th rack travel in: 1200  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.8

Testing:  
Speed rpm : 200  
Minimum rack trave: 7.70  
Speed rpm : 300  
Rack travel in mm : 5.70...6.00  
Rack travel in mm : 2.00  
Speed rpm : 380...420

#### Aneroid/Altitude Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 900  
Rack travel mm : 13.90...14.10

Measurement  
Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 11.00...11.20  
2nd pressure hPa : 550  
Rack travel in m: 13.10...13.30  
3rd pressure hPa : 1100  
Rack travel in m: 14.10...14.20  
4th pressure hPa : 1200  
Rack travel in m: 14.50...14.70  
5th pressure hPa : -  
Rack travel in m: 9.50...9.80

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1350  
Speed rpm : 950  
Del.quantity cm3/ : 241.0...243.0  
1000 s: (238.0...246.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

Aneroid pressure h: 1350  
Speed rpm : 800  
Del.quantity cm3/ : 241.0...246.0  
1000 s: (238.0...249.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 145.0...147.0  
1000 s: (142.0...150.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.80  
Speed rpm : 990...1005

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 205.0...225.0  
1000 s: (201.0...229.0)

Remarks:

:

## Note remarks

1st version

Speed rpm : 600  
Aneroid pressure h: 900  
Del.quantity : 214.0...216.0  
1000 : (211.0...219.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 117...125

Testing:

1st rack travel in: 13.80  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1065...1095  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 80...88

Testing:

Speed rpm : 200  
Minimum rack travel: 7.70  
Speed rpm : 300  
Rack travel in mm : 5.70...6.00

#### CONSTANT REGULATION

Speed rpm : 300...500

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 900  
Rack travel mm : 13.90...14.10

Measurement

Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 11.00...11.20  
2nd pressure hPa : 550  
Rack travel in m: 13.10...13.30  
3rd pressure hPa : 1100  
Rack travel in m: 14.10...14.20  
4th pressure hPa : 1200  
Rack travel in m: 14.50...14.70  
5th pressure hPa : -  
Rack travel in m: 9.50...9.80

START CUT-GJT

L26

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1350  
Speed rpm : 950  
Del.quantity cm3/ : 241.0...243.0  
1000 s: (238.0...246.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1350  
Speed rpm : 800  
Del.quantity cm3/ : 241.0...246.0  
1000 s: (238.0...249.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 145.0...147.0  
1000 s: (142.0...150.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.80  
Speed rpm : 990...1000

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 205.0...225.0  
1000 s: (201.0...229.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 30.04.92  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 646 906

Injection pump  
Pump designation : PE6P120A320LS7832-10  
EP type number : 0 412 626 852  
Governor  
Governor design. : RQ300/1050PA952  
Governor no. : 0 421 801 521

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 228.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
: (5.45...5.65)

Rack travel in mm : 20.00...21.00

Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.80...15.00

Del.quantity cm3/ : 22.0...22.2

100 s: (21.7...22.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...7.0

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 220.0...222.0

1000 : (217.0...225.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.70

Speed rpm : 1095...1110

2nd rack travel in: 4.00

Speed rpm : 1150...1180

4th rack travel in: 1300

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 6.7

Testing:

Speed rpm : 200

Minimum rack travel: 8.70

Speed rpm : 300

Rack travel in mm : 6.40...7.00

Rack travel in mm : 2.00

Speed rpm : 390...430

TORQUE CONTROL

Dimension a mm : 0.35

2nd speed rpm : 1050

Rack travel in m: 14.70...14.90

3rd speed rpm : 800

Rack travel in m: 15.20...15.40

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 600

Pressure hPa : 1000

Rack travel mm : 14.80...15.00

Measurement

Speed 1/min : 600

1st pressure hPa : 300

Rack travel in m: 11.20...11.40

2nd pressure hPa : 550

Rack travel in m: 13.50...13.70

3rd pressure hPa : 1400

Rack travel in m: 14.90...15.00 \*

4th pressure hPa : -

Rack travel in m: 9.70...10.00

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600

Speed rpm : 1050

Del.quantity cm3/ : 221.0...224.0

1000 s: (219.0...227.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: 1600

Speed rpm : 800

Del.quantity cm3/ : 235.0...239.0

1000 s: (232.0...242.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 129.0...131.0

1000 s: (126.0...134.0)

Spread cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.70

Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 200.0...220.0

1000 s: (196.0...224.0)

Remarks:

:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

## Note remarks

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values

Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.80

Speed rpm : 990...1005

2nd rack travel in: 4.00

Speed rpm : 1065...1095

4th rack travel in: 1200

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 5.8

Testing:

Speed rpm : 200

Minimum rack travel: 7.70

Speed rpm : 300

Rack travel in mm : 5.70...6.00

Rack travel in mm : 2.00

Speed rpm : 380...420

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 600

Pressure hPa : 900

Rack travel mm : 13.90...14.10

Measurement

Speed 1/min : 600

1st pressure hPa : 300

Rack travel in m: 11.00...11.20

2nd pressure hPa : 550

Rack travel in m: 13.30...13.50

3rd pressure hPa : 1100

Rack travel in m: 14.10...14.20

4th pressure hPa : 1200

Rack travel in m: 14.50...14.70

5th pressure hPa : -

Rack travel in m: 9.40...9.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1350

Speed rpm : 950

Del.quantity cm3/ : 241.0...243.0

1000 s: (238.0...246.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: 1350

Speed rpm : 800

Del.quantity cm3/ : 241.0...246.0

1000 s: (238.0...249.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 145.0...147.0

1000 s: (142.0...150.0)

Spread cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.80

Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100

Rack travel in mm : 13.00...13.50

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : SCA  
Edition : 22.01.93  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 646 911

Injection pump  
Pump designation : PE6P120A320RS7138Z  
EP type number : 0 412 626 856  
Governor  
Governor design. : RQ200/1100PA873-1  
Governor no. : 0 421 801 615

Customer-spec. information  
Customer : SCANIA

Engine : DSC9 07

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 104

Opening  
pressure, bar : 250...253

Orifice plate  
diameter mm : 0,7

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50  
: (4.35...4.55)  
Rack travel in mm : 9.00...12.00

M03

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.80...11.90

Del.quantity cm3/ : 15.0...15.2

100 s: (14.7...15.5)

Spread cm3 : 0.8

100 s: (1.2)

2nd speed rpm : 250.0

Rack travel in mm : 4.5...4.9

Del.quantity cm3/ : 1.2...1.6

100 s: (-)

Spread cm3 : 0.4

100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 150.0...152.0

1000 : (147.0...155.0)

Spread cm3 : 8.00

1000 : (12.00)

## RATED SPEED

### 1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.5

### Testing:

1st rack travel in: 10.80

Speed rpm : 1145...1160

2nd rack travel in: 4.00

Speed rpm : 1290...1320

4th rack travel in: 1400  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 4.6

#### Testing:

Speed rpm : 100

Minimum rack travel: 6.10

Speed rpm : 250

Rack travel in mm : 4.50...4.70

Rack travel in mm : 2.00

Speed rpm : 320...360

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting

Speed rpm : 500

Pressure hPa : 900

Rack travel mm : 11.80...11.90

#### Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 9.90...10.30

2nd pressure hPa : 350

Rack travel in m: 11.50...11.60

3rd pressure hPa : 220

Rack travel in m: 10.70...10.90

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 900

Speed rpm : 1100

Del.quantity cm<sup>3</sup>/ : 145.0...153.0  
1000 s: (143.0...155.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 114.0...118.0  
1000 s: (112.0...120.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 10.80

Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

MO4

Speed rpm : 100  
Rack travel in mm : 9.90...10.30

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.50...4.70

Remarks:

:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring  
preload on new delivery-valve holders  
to 2.9...3.1 mm.

Start-of-delivery setting with ROBO  
diaphragm.

#### APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 9,6 o  
Edition : 27.03.92  
Replaces : 01.92  
Test oil : ISO-4113

Combination no. : 0 402 646 917

Injection pump  
Pump designation : PE6P120A320LS7834  
EP type number : 0 412 626 841  
Governor  
Governor design. : RQ300/950PA971  
Governor no. : 0 421 801 543

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
: (5.45...5.65)  
Rack travel in mm : 20.00...21.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.50...14.70

Del.quantity cm3/ : 22.7...22.9

100 s: (22.4...23.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.9

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1100

Del.quantity : 227.0...229.0

1000 : (224.0...232.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.90  
Speed rpm : 990...1005  
2nd rack travel in: 4.00  
Speed rpm : 1065...1095  
4th rack travel in: 12.00  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.6

Testing:

Speed rpm : 200  
Minimum rack travel: 8.50  
Speed rpm : 300  
Rack travel in mm : 6.30...6.90  
Rack travel in mm : 2.00  
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.35  
2nd speed rpm : 950  
Rack travel in m: 14.90...15.10  
3rd speed rpm : 800  
Rack travel in m: 15.20...15.40

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1100  
Rack travel mm : 14.50...14.70

Measurement

Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 10.70...10.90  
2nd pressure hPa : 700  
Rack travel in m: 13.50...13.70  
3rd pressure hPa : 1400  
Rack travel in m: 14.60...14.80  
4th pressure hPa : 1550  
Rack travel in m: 14.90...15.10  
5th pressure hPa : -  
Rack travel in m: 10.00...10.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1800  
Speed rpm : 950

Del.quantity cm3/ : 236.0...239.0  
1000 s: (233.0...242.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1800  
Speed rpm : 800  
Del.quantity cm3/ : 243.0...247.0  
1000 s: (240.0...250.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 132.0...134.0  
1000 s: (129.0...137.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.90  
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 30.0...55.0  
1000 s: (-)  
Rack travel in mm : 10.00...10.30

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 30.04.92  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 646 919  
  
Injection pump  
Pump designation : PE6P120A320LS7808-10  
EP type number : 0 412 626 850  
Governor  
Governor design. : RQ300/950PA762-13  
Governor no. : 0 421 801 544

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 250.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.10...14.30

Del.quantity cm<sup>3</sup>/ : 21.6...21.8

100 s: (21.3...22.1)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.7...6.0

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 750

Del.quantity : 216.0...218.0

1000 : (213.0...221.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 14.30

Speed rpm : 1090...1105

2nd rack travel in: 4.00

Speed rpm : 1175...1205

4th rack travel in: 1300

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 5.8

Testing:

Speed rpm : 200

Minimum rack travel: 7.70

Speed rpm : 300

Rack travel in mm : 5.70...6.00

Rack travel in mm : 2.00

Speed rpm : 380...420

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 600

Pressure hPa : 750

Rack travel mm : 14.10...14.30

Measurement

Speed 1/min : 600

1st pressure hPa : 200

Rack travel in m: 10.30...10.50

2nd pressure hPa : 500

Rack travel in m: 13.00...13.20

3rd pressure hPa : 950

Rack travel in m: 14.20...14.40 \*

4th pressure hPa : 1150

Rack travel in m: 14.80...15.00

5th pressure hPa : -

Rack travel in m: 9.20...9.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1350

Speed rpm : 1050

Del.quantity cm3/ : 243.0...245.0

1000 s: (240.0...248.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: 1350

Speed rpm : 750

Del.quantity cm3/ : 239.0...243.0

1000 s: (236.0...246.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: --

Speed rpm : 500

Del.quantity cm3/ : 134.0...136.0

1000 s: (131.0...139.0)

Spread cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.30

Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 210.0...230.0

1000 s: (206.0...234.0)

Remarks:

:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

Note remarks

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values

Rack travel in mm : 20.0

Testing:

1st rack travel in: 14.10

Speed rpm : 990...1005

2nd rack travel in: 4.00

Speed rpm : 1065...1095

4th rack travel in: 1150

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 5.8

Testing:

Speed rpm : 200

Minimum rack travel: 7.70

Speed rpm : 300

Rack travel in mm : 5.70...6.00

Rack travel in mm : 2.00

Speed rpm : 380...420

TORQUE CONTROL

2nd speed rpm : 950

3rd speed rpm : 700

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 600

Pressure hPa : 900

Rack travel mm : 13.90...14.10

Measurement

Speed 1/min : 600

1st pressure hPa : 350

Rack travel in m: 10.70...10.90

2nd pressure hPa : 600

Rack travel in m: 12.80...13.00

3rd pressure hPa : 1150

Rack travel in m: 14.20...14.40

4th pressure hPa : 1250

Rack travel in m: 14.70...14.90

5th pressure hPa : -

Rack travel in m: 9.20...9.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1550

Speed rpm : 950

Del.quantity cm3/ : 251.0...254.0

1000 s: (248.0...257.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: 1550

Speed rpm : 750

Del.quantity cm3/ : 242.0...246.0

1000 s: (239.0...249.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 138.0...140.0

1000 s: (135.0...143.0)

Spread cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.10

Speed rpm : 990...1005

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 8,7 b  
Edition : 18.12.91  
Replaces : 05.91  
Test oil : ISO-4113

Combination no. : 0 402 646 933

Injection pump  
Pump designation : PE6P120A320RS7228  
EP type number : 0 412 626 845  
Governor  
Governor design. : RQ275/1150PA987  
Governor no. : 0 421 801 578

Customer spec. information  
Customer : DAF

Engine : RS 222

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00x2.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 14.20...15.20

M11

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.50...5.70  
& maximum rack tra: 14.2...15.2  
Difference ° CS : 3.25...4.75

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 14.70...14.80

Del. quantity cm<sup>3</sup>/ : 17.7...17.9

100 s: (17.4...18.2)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 6.6...6.8

Del. quantity cm<sup>3</sup>/ : 1.3...1.9

100 s: (1.0...2.2)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.60...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1000

Aneroid pressure h: 1000

Del. quantity : 177.0...179.0

1000 : (174.0...182.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

### 1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 16.0

Testing:

1st rack travel in: 13.70  
Speed rpm : 1175...1190  
2nd rack travel in: 4.00  
Speed rpm : 1260...1290  
4th rack travel in: 1450  
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 275  
Rack travel in mm : 5.6

Testing:

Speed rpm : 100  
Minimum rack travel: 7.10  
Speed rpm : 275  
Rack travel in mm : 5.50...5.70  
Rack travel in mm : 2.00  
Speed rpm : 330...370

TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 15.20...15.30  
2nd speed rpm : 1150  
Rack travel in m: 15.10...15.30

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 14.70...14.80

Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 12.60...12.80  
2nd pressure hPa : 470  
Rack travel in m: 13.90...14.00  
3rd pressure hPa : 350  
Rack travel in m: 13.00...13.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 131.0...133.0  
1000 s: (128.0...136.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.70  
Speed rpm : 1175...1190

LOW IDLE

Speed rpm : 275  
Rack travel in mm : 5.50...5.70

Remarks:

:

Start-of-delivery blocking at start of  
delivery of cylinder no. 1.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 30.04.92  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 646 943

Injection pump  
Pump designation : PE6P120A320S7808-10  
EP type number : 0 412 626 850  
Governor  
Governor design. : RQV300...950PA795-28  
Governor no. : 0 421 813 925

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 250.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.90...14.10

Del.quantity cm<sup>3</sup>/ : 22.1...22.3

100 s: (21.8...22.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.7...6.0

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.00...1.50

2nd speed rpm : 567  
travel mm : 4.40...4.90

3rd speed rpm : 780  
travel mm : 6.10...6.60

4th speed rpm : 1009  
travel mm : 8.30...8.80

5th speed rpm : 1092  
travel mm : 9.80...10.30

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1090

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 600  
Aneroid pressure h: 950  
Del.quantity : 221.0...223.0  
1000 : (218.0...226.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 95...103

#### Testing:

1st rack travel in: 14.10  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1065...1095  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 69...77

#### Testing:

Speed rpm : 200  
Minimum rack travel: 7.70  
Speed rpm : 300  
Rack travel in mm : 5.70...6.00

#### CONSTANT REGULATION

Speed rpm : 300...500

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 900  
Rack travel mm : 13.90...14.10

#### Measurement

Speed 1/min : 600

1st pressure hPa : 350  
Rack travel in m: 10.70...10.90  
2nd pressure hPa : 600  
Rack travel in m: 12.80...13.00  
3rd pressure hPa : 1150  
Rack travel in m: 14.20...14.40  
4th pressure hPa : 1250  
Rack travel in m: 14.70...14.90  
5th pressure hPa : -  
Rack travel in m: 9.20...9.50

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1550  
Speed rpm : 950  
Del.quantity cm3/ : 251.0...254.0  
1000 s: (248.0...257.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1550  
Speed rpm : 750  
Del.quantity cm3/ : 242.0...246.0  
1000 s: (239.0...249.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 138.0...140.0  
1000 s: (135.0...143.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 14.10  
Speed rpm : 990...1000

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 210.0...230.0  
1000 s: (206.0...234.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
 Edition : 30.04.92  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 646 944  
 Injection pump  
 Pump designation : PE6P120A320LS7808-10  
 EP type number : 0 412 626 850  
 Governor  
 Governor design. : RGV300...1050PA797  
 -29  
 Governor no. : 0 421 813 926

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 250.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.10...14.30

Del.quantity cm<sup>3</sup>/ : 21.6...21.8

100 s: (21.3...22.1)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.7...6.0

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.00...1.50

2nd speed rpm : 608  
 travel mm : 4.80...5.30

3rd speed rpm : 820  
 travel mm : 5.90...6.40

4th speed rpm : 1108  
 travel mm : 8.30...8.80

5th speed rpm : 1183  
 travel mm : 9.60...10.30

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1090

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600  
Aneroid pressure h: 750  
Del.quantity : 216.0...218.0  
1000 : (213.0...221.0)  
Spread cm3 : 5.00  
1000 : (9.00)

RATED SPEED

1st version

Control lever  
position degrees: 118...126

Testing:

1st rack travel in: 14.30  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1175...1205  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 54...62

Testing:

Speed rpm : 200  
Minimum rack travel: 7.70  
Speed rpm : 300  
Rack travel in mm : 5.70...6.00

CONSTANT REGULATION

Speed rpm : 300...500

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 750  
Rack travel mm : 14.10...14.30

Measurement

Speed 1/min : 600

1st pressure hPa : 200  
Rack travel in m: 10.30...10.50  
2nd pressure hPa : 500  
Rack travel in m: 13.00...13.20  
3rd pressure hPa : 950  
Rack travel in m: 14.20...14.40 \*  
4th pressure hPa : 1150  
Rack travel in m: 14.80...15.00  
5th pressure hPa : -  
Rack travel in m: 9.20...9.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1350  
Speed rpm : 1050  
Del.quantity cm3/ : 243.0...245.0  
1000 s: (240.0...248.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1350  
Speed rpm : 750  
Del.quantity cm3/ : 239.0...243.0  
1000 s: (236.0...246.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 134.0...136.0  
1000 s: (131.0...139.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.30  
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 210.0...230.0  
1000 s: (206.0...234.0)

Remarks:

\* Increase in control-rod travel with  
respect to setting at least 0.1 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : UNI 13,8 h2  
 Edition : 05.10.92  
 Replaces : 07.92  
 Test oil : ISO-4113  
 Combination no. : 0 402 646 947  
 Injection pump  
 Pump designation : PE6P130A72ORS7225  
 EP type number : 0 412 636 817  
 Governor  
 Governor design. : RQV300...950PA1002  
 -1K  
 Governor no. : 0 421 815 280

Customer-spec. information  
 Customer : IVECO-UNIC

Engine : 8210.42.400

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
 : (4.95...5.15)

Rack travel in mm : 13.50...14.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.90...6.10  
 & maximum rack tra: 12.5...13.5  
 Difference \* CS : 1.25...2.75

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.00...13.10

Del. quantity cm3/ : 31.3...31.5

100 s: (31.0...31.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.0...4.4

Del. quantity cm3/ : 1.9...2.5

100 s: (1.6...2.8)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 995

travel mm : 8.50...8.70

2nd speed rpm : 300

travel mm : 1.00...1.40

3rd speed rpm : 500

travel mm : 3.30...3.90

4th speed rpm : 750

travel mm : 5.80...6.20

5th speed rpm : 1300

travel mm : 13.00...14.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1125

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 900  
Aneroid pressure h: 900  
Del.quantity : 313.0...315.0  
1000 : (310.0...318.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 112...120

Testing:  
1st rack travel in: 12.00  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1100...1130  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 66...74

Testing:  
Speed rpm : 100  
Minimum rack travel: 5.70  
Speed rpm : 300  
Rack travel in mm : 4.00...4.40

CONSTANT REGULATION  
Speed rpm : 340...460

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 13.00...13.10  
2nd speed rpm : 700  
Rack travel in m: 12.70...12.90  
3rd speed rpm : 550  
Rack travel in m: 12.00...12.20  
4th speed rpm : 300  
Rack travel in m: 11.20...11.70

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 900  
Pressure hPa : 900  
Rack travel mm : 13.00...13.10

Measurement  
Speed 1/min : 900

M18

1st pressure hPa : -  
Rack travel in m: 8.30...8.50  
2nd pressure hPa : 580  
Rack travel in m: 11.90...12.00  
3rd pressure hPa : 300  
Rack travel in m: 9.30...9.70

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 550  
Del.quantity cm3/ : 286.0...292.0  
1000 s: (283.0...295.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 148.0...150.0  
1000 s: (145.0...153.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.00  
Speed rpm : 990...1000

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...165.0  
1000 s: (131.0...169.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.00...4.40  
Del.quantity cm3/ : 19.0...25.0  
1000 s: (16.0...28.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 11,7 n1  
 Edition : 23.10.92  
 Replaces : 02.92  
 Test oil : ISO-4113  
 Combination no. : 0 402 646 949  
 Injection pump  
 Pump designation : PE6P120A320RS7230Z  
 EP type number : 0 412 626 848  
 Governor  
 Governor design. : RQV250...1000PA990K  
 Governor no. : 0 421 815 274

Customer-spec. information  
 Customer : DAF

Engine : WS 295 G

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 105  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8  
 Test lines : 1 680 750 089  
 Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 5.00...5.10  
 : (4.95...5.15)  
 Rack travel in mm : 14.00...15.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 980  
 Rack travel in mm : 13.70...13.80  
 Del.quantity cm3/ : 25.4...25.6  
 100 s: (25.1...25.9)  
 Spread cm3 : 0.5  
 100 s: (0.9)  
 2nd speed rpm : 250.0  
 Rack travel in mm : 5.8...6.0  
 Del.quantity cm3/ : 1.4...2.0  
 100 s: (1.1...2.3)  
 Spread cm3 : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.30...1.70  
 2nd speed rpm : 285  
 travel mm : 2.10...2.50  
 3rd speed rpm : 1030  
 travel mm : 9.60...10.00  
 4th speed rpm : 1145  
 travel mm : 11.20...11.40

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1070  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 980  
 Aneroid pressure h: 1500  
 Del.quantity : 254.0...256.0  
 1000 : (251.0...259.0)  
 Spread cm3 : 5.00  
 1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 117...125

Testing:  
1st rack travel in: 12.70  
Speed rpm : 1030...1040  
2nd rack travel in: 4.00  
Speed rpm : 1135...1165  
4th rack travel in: 1275  
Speed rpm : 0.00...1.40

LOW IDLE 1  
Control lever  
position degrees: 67...75

Testing:  
Speed rpm : 150  
Minimum rack travel: 7.00  
Speed rpm : 250  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 320...360

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 500  
Rack travel in m: 12.30...12.40  
2nd speed rpm : 550  
Rack travel in m: 12.30...12.50  
3rd speed rpm : 750  
Rack travel in m: 12.90...13.00  
4th speed rpm : 850  
Rack travel in m: 13.30...13.50  
5th speed rpm : 980  
Rack travel in m: 14.00...14.20

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 980  
Pressure hPa : 1500  
Rack travel mm : 13.70...13.80

Measurement  
Speed 1/min : 980

1st pressure hPa : -  
Rack travel in m: 8.00...8.20  
2nd pressure hPa : 380  
Rack travel in m: 10.80...10.90  
3rd pressure hPa : 150  
Rack travel in m: 9.10...9.30

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1500  
Speed rpm : 500  
Del.quantity cm3/ : 267.0...271.0  
1000 s: (264.0...274.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm3/ : 143.0...145.0  
1000 s: (140.0...148.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.70  
Speed rpm : 1030...1040

LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.10...5.30

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB  
Edition : 30.04.92  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 646 950  
  
Injection pump  
Pump designation : PE6P120A320LS7837-10  
EP type number : 0 412 626 855  
Governor  
Governor design. : RQ300/950PA993-2  
Governor no. : 0 421 801 590

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 250.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
                  : (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.70...14.90

Del.quantity cm3/ : 23.3...23.5

100 s: (23.0...23.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.2...6.8

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 233.0...235.0

1000 : (230.0...238.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 14.70  
Speed rpm : 990...1005  
2nd rack travel in: 4.00  
Speed rpm : 1065...1095  
4th rack travel in: 1200  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.5

Testing:

Speed rpm : 200  
Minimum rack travel: 8.30  
Speed rpm : 300  
Rack travel in mm : 6.20...6.80  
Rack travel in mm : 2.00  
Speed rpm : 380...420

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 14.70...14.90

Measurement

Speed 1/min : 600

1st pressure hPa : 200  
Rack travel in m: 9.80...10.00  
2nd pressure hPa : 600  
Rack travel in m: 13.50...13.70  
3rd pressure hPa : 1250  
Rack travel in m: 14.80...15.00  
4th pressure hPa : 1450  
Rack travel in m: 15.40...15.60  
5th pressure hPa : -  
Rack travel in m: 9.50...9.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1800  
Speed rpm : 950  
Del.quantity cm3/ : 251.0...254.0  
1000 s: (248.0...257.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

Aneroid pressure h: 1800  
Speed rpm : 800  
Del.quantity cm3/ : 250.0...254.0  
1000 s: (247.0...257.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 135.0...137.0  
1000 s: (132.0...140.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 14.70  
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 240.0...260.0  
1000 s: (236.0...264.0)

Remarks:

\* Increase in control-rod travel with  
respect to setting at least 0.1 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 9,6 o 5  
Edition : 30.04.92  
Replaces : 03.92  
Test oil : ISO-4113

Combination no. : 0 402 646 955

Injection pump  
Pump designation : PE6P120A320LS7834-1  
EP type number : 0 412 626 857  
Governor  
Governor design. : RQV350...1050PA866  
-13  
Governor no. : 0 421 813 954

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
: (5.45...5.65)  
Rack travel in mm : 20.00...21.00  
Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.60...14.80

Del.quantity cm<sup>3</sup>/ : 22.2...22.4

100 s: (21.9...22.7)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.1...5.7

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 1.30...1.80

2nd speed rpm : 570  
travel mm : 3.30...3.80

3rd speed rpm : 900  
travel mm : 5.40...5.90

4th speed rpm : 1107  
travel mm : 7.80...8.30

5th speed rpm : 1204  
travel mm : 9.80...10.30

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 600  
Aneroid pressure h : 900  
Del. quantity : 222.0...224.0  
1000 : (219.0...227.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 117...125

Testing:  
1st rack travel in: 13.70  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 63...71

Testing:  
Speed rpm : 200  
Minimum rack travel: 7.30  
Speed rpm : 350  
Rack travel in mm : 5.10...5.70

CONSTANT REGULATION  
Speed rpm : 350...600

TORQUE CONTROL  
Dimension a mm : 0.40  
2nd speed rpm : 1050  
Rack travel in m: 14.80...15.00  
3rd speed rpm : 800  
Rack travel in m: 15.20...15.40

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 900  
Rack travel mm : 14.60...14.80

Measurement  
Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 11.40...11.60  
2nd pressure hPa : 600  
Rack travel in m: 13.40...13.60

3rd pressure hPa : 1350  
Rack travel in m: 14.70...14.90  
4th pressure hPa : -  
Rack travel in m: 10.00...10.30

#### START CUT-OUT

Speed 1/min : 270 (290)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1800  
Speed rpm : 1050  
Del. quantity cm<sup>3</sup>/ : 234.0...237.0  
1000 s: (231.0...240.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1800  
Speed rpm : 800  
Del. quantity cm<sup>3</sup>/ : 241.0...245.0  
1000 s: (238.0...248.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1800  
Speed rpm : 1050  
Del. quantity cm<sup>3</sup>/ : 175.0...179.0 \*  
1000 s: (172.0...182.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 132.0...134.0  
1000 s: (129.0...137.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.70  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 250.0...270.0  
1000 s: (246.0...274.0)

Remarks:

\* = Set at reduced-delivery stop.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 9,6 o 7  
Edition : 30.04.92  
Replaces : 03.92  
Test oil : ISO-4113  
  
Combination no. : 0 402 646 961  
  
Injection pump  
Pump designation : PE6P120A320LS7834-1  
EP type number : 0 412 626 857  
Governor  
Governor design. : RQV350...950PA866-14  
Governor no. : 0 421 813 959

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 213.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
(5.45...5.55)  
Rack travel in mm : 20.00...21.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.30...14.50

Del.quantity cm3/ : 20.9...21.1

100 s: (20.6...21.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.6...6.2

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 1.30...1.80

2nd speed rpm : 424  
travel mm : 2.30...2.80

3rd speed rpm : 700  
travel mm : 4.10...4.60

4th speed rpm : 1008  
travel mm : 7.90...8.40

5th speed rpm : 1220  
travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 985

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600  
Aneroid pressure h: 900  
Del.quantity : 209.0...211.0  
1000 : (206.0...214.0)  
Spread cm3 : 5.00  
1000 : (9.00)

RATED SPEED

1st version  
Control lever  
position degrees: 111...119

Testing:

1st rack travel in: 13.80  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1065...1095  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 63...71

Testing:

Speed rpm : 200  
Minimum rack travel: 7.30  
Speed rpm : 350  
Rack travel in mm : 5.10...5.70

CONSTANT REGULATION

Speed rpm : 350...600

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 900  
Rack travel mm : 13.30...13.50

Measurement

Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 9.80...10.00  
2nd pressure hPa : 550  
Rack travel in m: 12.30...12.50  
3rd pressure hPa : 1300  
Rack travel in m: 13.70...13.90  
4th pressure hPa : -  
Rack travel in m: 9.90...10.20

START CUT-OUT

Speed 1/min : 270 (290)

M26

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600  
Speed rpm : 950  
Del.quantity cm3/ : 228.0...231.0  
1000 s: (225.0...234.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1600  
Speed rpm : 800  
Del.quantity cm3/ : 230.0...234.0  
1000 s: (227.0...237.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1600  
Speed rpm : 950  
Del.quantity cm3/ : 169.0...173.0 \*  
1000 s: (166.0...176.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 132.0...134.0  
1000 s: (129.0...137.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.80  
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 240.0...260.0  
1000 s: (236.0...264.0)

Remarks:

:

\* = Set at reduced-delivery stop.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF  
Edition : 22.01.93  
Replaces : 10.92  
Test oil : ISO-4113  
  
Combination no. : 0 402 646 984  
  
Injection pump  
Pump designation : PE6P120A320RS7248  
EP type number : 0 412 626 861  
Governor  
Governor design. : RQ275/1150PA987  
Governor no. : 0 421 801 578

Customer-spec. information  
Customer : DAF

Engine : RS 222 L

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00x2.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 12.00...13.00

M27

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10  
& maximum rack tra: 11.7...12.7  
Difference ° CS : 2.25...3.75

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.20...12.30

Del.quantity cm3/ : 18.4...18.6

100 s: (18.1...18.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 5.3...5.5

Del.quantity cm3/ : 1.3...1.9

100 s: (1.0...2.2)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.20...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1000

Aneroid pressure h: 1000

Del.quantity : 186.0...188.0

1000 : (183.0...191.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

### 1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 15.8

Testing:

1st rack travel in: 11.20  
Speed rpm : 1200...1216  
2nd rack travel in: 4.00  
Speed rpm : 1275...1305  
4th rack travel in: 1450  
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 275  
Rack travel in mm : 4.7

Testing:

Speed rpm : 175  
Minimum rack travel: 7.00  
Speed rpm : 275  
Rack travel in mm : 4.60...4.80  
Rack travel in mm : 2.00  
Speed rpm : 320...360

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 12.20...12.30

Measurement

Speed 1/min : 600

1st pressure hPa : -

Rack travel in m: 9.30...9.50

2nd pressure hPa : 420

Rack travel in m: 11.60...11.70

3rd pressure hPa : 240

Rack travel in m: 10.30...10.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 600

Del.quantity cm<sup>3</sup>/ : 121.0...123.0  
1000 s: (118.0...126.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.20

Speed rpm : 1200...1215

LOW IDLE

Speed rpm : 275  
Rack travel in mm : 4.60...4.80

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF  
Edition : 23.10.92  
Replaces : 07.92  
Test oil : ISO-4113  
  
Combination no. : 0 402 646 991  
  
Injection pump  
Pump designation : PE6P120A32ORS7218Y  
EP type number : 0 412 626 859  
Governor  
Governor design. : RQV275...1000PA939-2  
Governor no. : 0 421 813 986

Customer spec. information  
Customer : DAF

Engine : WS 222 L

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 417 413 025  
  
Inlet press., bar : 1.50  
  
Test nozzle holder  
assembly : 1 688 901 105  
  
Opening  
pressure, bar : 207...210  
  
Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 5.30...5.40  
: (5.25...5.45)  
Rack travel in mm : 13.00...14.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10  
& maximum rack tra: 13.2...14.2  
Difference ° CS : 2.25...3.75

## BASIC SETTING

1st speed rpm : 850  

---

Rack travel in mm : 13.80...13.90  

---

Del.quantity cm3/ : 19.8...20.0  

---

100 s: (19.5...20.3)  

---

Spread cm3 : 0.5  

---

100 s: (0.9)  

---

2nd speed rpm : 275.0  
Rack travel in mm : 6.2...6.6  
Del.quantity cm3/ : 1.4...2.0  
100 s: (1.1...2.3)  
Spread cm3 : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 275  
travel mm : 1.25...1.45  
2nd speed rpm : 301  
travel mm : 1.50...2.00  
3rd speed rpm : 351  
travel mm : 2.30...2.80  
4th speed rpm : 676  
travel mm : 4.25...4.75  
5th speed rpm : 1058  
travel mm : 7.95...8.15

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1150  
Rack travel in mm : 11.40...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 850  
Aneroid pressure h: 1000  
Del.quantity : 198.0...200.0  
1000 : (195.0...203.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 115...123

Testing:  
1st rack travel in: 12.80  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1145...1175  
4th rack travel in: 1250  
Speed rpm : 0.00...1.40

LOW IDLE 1  
Control lever  
position degrees: 78...86

Testing:  
Speed rpm : 175  
Minimum rack travel: 6.50  
Speed rpm : 275  
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION  
Speed rpm : 300...350

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 13.80...13.90

Measurement  
Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 11.50...11.70  
2nd pressure hPa : 400  
Rack travel in m: 13.20...13.30  
3rd pressure hPa : 230  
Rack travel in m: 12.00...12.20

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -

N02

Speed rpm : 600  
Del.quantity cm3/ : 139.0...141.0  
1000 s: (136.0...144.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.80  
Speed rpm : 1040...1050

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 4.90...5.10

Remarks:

:

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : OPE  
Edition : 07.93  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE4/10F2150L489  
Type number : 0 460 404 074  
Customer Part-No. :

Customer-specific information  
Customer : OPEL

Engine : 2,3 DTR

Power KW: 74

## TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 000

Opening  
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 840

Start of delivery

Indicator setting  
Piston stroke mm: 1.0  
Outlet : A

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000  
Charge press. hPa: 1000  
Setting value mm: 2.70...3.10

AFB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1000  
Charge press hPa: 1000  
Setting value bar: 4.20...4.80  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1200  
Charge press. hPa: 1000  
Del. quantity cm3/  
1000S.: 62.50...63.50

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Dispersion cm3/  
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 500  
Del. quantity cm3/  
1000S.: 40.50...41.50

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 290  
Del. quantity cm3/  
1000S.: 13.50...17.50

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/  
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2500  
Charge press hPa: 1000  
Del. quantity cm3/  
1000S.: 15.00...21.00

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12

Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 37.00...39.00 L  
mind 1000s.: 37.00

KSB/AFB

Valve Volt: 12

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

Speed 1/min: 1000  
Charge press hPa: Z +  
Inj.-qty. cm<sup>3</sup>/  
difference 1000s.: 22.00...24.00

KSB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12

TD-travel dif.measurement

correttore anticipo iniezione (SV)

1.Speed 1/min: 1000

Charge press hPa: Z +

TD-travel

difference mm: 1.20...1.40

KSB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications

Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 2100  
Charge press hPa: 1000  
TD travel mm: 8.30...9.10  
mm: (8.00...9.40)

KSB/AFB

valve Volt: 12

Shutoff : -

electromagnet Volt: 12

3rd speed 1/min: 1000

Charge press hPa: 1000

TD travel mm: 2.70...3.10

mm: (2.20...3.60)

KSB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12

4th speed 1/min: 800

Charge press hPa: 1000

TD travel mm: 1.30...2.10

mm: (1.00...2.40)

KSB/AFB

valve Volt: 12

NO4

Shutoff

electromagnet Volt: 12

9th speed 1/min: 300A

Charge press. hPa: 1000

TD travel mm: 1.50...3.50

mm: (1.30...3.70)

KSB/AFB

valve Volt: -

Shutoff

electromagnet Volt: 12

10th speed 1/min: 800B

Charge press. hPa: 1000

TD travel mm: 3.60...6.00

mm: (3.00...6.60)

KSB/AFB

valve Volt: -

Shutoff

electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 2100

Charge press. hPa: 1000

Supply-pump

pressure bar: 6.90...7.50

KSB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12

2nd speed 1/min: 1000

Charge press. hPa: 1000

Supply-pump

pressure bar: 4.20...4.80

KSB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12

3rd speed 1/min: 800

Charge press. hPa: 1000

Supply-pump

pressure bar: 3.70...4.30

KSB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12

4th speed 1/min: 300

Charge press. hPa: 1000

Supply-pump

pressure bar: 4.20...4.80

KSB/AFB

valve Volt: -

Shutoff

electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500

Charge press. hPa: -

KSB/AFB

valve Volt: 12

Shutoff  
 electromagnet Volt: 12  
 Overflow : 41.70...83.40  
 quantity cm3/10s: (26.70...98.40)  
 2nd speed 1/min: 2150  
 Charge press. hPa: 1000  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 Overflow : 55.60...139.00  
 quantity cm3/10s: (40.60...153.00)  
 Delivery-quant. and breakaway char.:

1st speed 1/min: 800\*  
 Charge-air pressure-setting  
 point hPa: 500  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 55.50...56.50  
 1000S.: (53.00...59.00)  
 2nd speed 1/min: 2700  
 Charge press. hPa: 1000  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 0.00...3.00  
 1000S.: (0.00...3.00)  
 5th speed 1/min: 2500  
 Charge press. hPa: 1000  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 15.00...21.00  
 1000S.: (14.00...22.00)  
 8th speed 1/min: 2300  
 Charge press. hPa: 1000  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 35.00...43.00  
 1000S.: (33.00...45.00)  
 9th speed 1/min: 2150  
 Charge press. hPa: 1000  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 49.80...52.20  
 1000S.: (48.70...53.30)  
 12th speed 1/min: 1200  
 Charge press. hPa: 1000

KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 62.50...63.50  
 1000S.: (60.70...65.30)  
 18th speed 1/min: 500  
 Charge press. hPa: -  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 40.50...41.50  
 1000S.: (38.70...43.30)

#### Mech. shutoff:

#### Electr. shutoff:

1st speed 1/min: 290  
 Del. quantity cm3/: 0.00...3.00  
 1000S.: (0.00...3.00)

Shutoff  
 electromagnet volt: -  
 KSB/AFB  
 valve Volt: -

#### Idle delivery:

1st speed 1/min: 290  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 13.50...17.50  
 1000S.: (11.50...19.50)

Dispersion cm3/: 3.0  
 1000S.: (3.0)

2nd speed 1/min: 380  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 0.00...3.00  
 1000S.: (0.00...3.00)

3rd speed 1/min: 320  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 7.00...13.00  
 1000S.: (6.50...13.50)

#### Load-dependent start of delivery: Inj.-qty.dif.measurement:

1st speed 1/min: 1000  
 Charge press. hPa: Z +  
 Inj.-qty. cm3/ : 22.00...24.00  
 difference 1000S.: (20.00...26.00)

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
5th speed 1/min: 1000  
Charge press. hPa: Z #  
Inj.-qty. cm<sup>3</sup>/: 2.00...3.00  
difference 1000S.: (2.00...8.00)

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12

TD-travel dif.measurement:  
correttore anticipo iniezione (SV):  
1st speed 1/min: 1000  
Charge press. hPa: Z +  
TD-travel : 1.20...1.40  
difference mm: (1.20...1.40)

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
4th speed 1/min: 1000  
Charge press. hPa: Z #  
TD-travel : 0.50...1.10  
difference mm: (0.50...1.10)

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 250  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 53.00...63.00  
1000S.: (50.00...66.00)

2nd speed 1/min: 400  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 40.00...50.00  
1000S.: (40.00...50.00)

3rd speed 1/min: 100  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 57.00...59.00 V  
1000S.: (50.00...66.00)

4th speed 1/min: 100

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 37.00...39.00 L  
1000S.: (30.00...46.00)

Shutoff electromagnet:

Cut-in  
min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
K mm: -  
KF mm: 5.8...6.2  
MS mm: 1.1...1.5  
SVS max. mm: 4.6  
Ya mm: 37.9...39.9  
Yb mm: 39.2...44.8

Remarks:  
Operate control lever after each  
manifold-pressure compensator pressure  
change.

\* Correction at adjusting nut

A = KSB adjustment point  
B = KSB curve point

Overflow restriction 0.55 mm - Part No.  
..303

Z = Absolute delivery

Starting delivery check  
V = Speed-control lever in full-load  
position

Starting delivery check  
L = Speed-control lever in idle  
position

Ya = Distance between VE flange and  
speed-control lever in idle  
position

Yb = Distance between VE flange and  
speed-control lever in rated speed  
position



Measurement point = edge of control  
Lever on distributor-head end



# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : SOF  
Edition : 07.93  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE4/10F2100R518  
Type number : 0 460 404 077  
Customer Part-No. :

Customer-specific information  
Customer : IVECO-SOFIM

Engine : 8140.67.2200

## TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 022

Opening  
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 450

Start of delivery  
Prestroke mm: 0.2  
(from BDC):  $\pm 0.02(0.04)$

Injection-pump setting values  
Test specifications in parentheses

## Timing-device travel

Speed 1/min: 1000  
Setting value mm: 0.90...1.10  
Shutoff  
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1000  
Setting value bar: 4.70...5.30  
Shutoff  
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500  
Del. quantity cm3/  
1000S.: 42.50...43.50

Shutoff  
electromagnet Volt: 12  
Dispersion cm3/: 3.0  
1000S.: (3.0)

## Low-idle speed regulation

Speed 1/min: 375  
Del. quantity cm3/  
1000S.: 12.00...16.00

Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 3.0  
1000S.: (3.0)

## Full-load speed regulation

Speed 1/min: 2300  
Del. quantity cm3/  
1000S.: 25.00...29.00

Shutoff  
electromagnet Volt: 12

## Start:

Speed 1/min: 100  
Del. quantity cm3/: 65.00...105.00  
mind 1000S.: 65.00

Shutoff  
electromagnet Volt: 12

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

Speed 1/min: 1000  
Charge press hPa: 12  
Inj.-qty. cm3/  
difference 1000S.: -15.0...-21.00#

Shutoff  
electromagnet Volt: 12  
TD-travel dif.measurement  
correttore anticipo iniezione (SV)

1.Speed 1/min: 1000  
TD-travel  
difference mm: -0.4...-0.60#

Shutoff  
electromagnet Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

# Timing-device characteristic:

1st speed 1/min: 1800  
TD travel mm: 6.10...6.70  
mm: (5.70...7.10)  
electromagnet Volt: 12  
3rd speed 1/min: 1000  
TD travel mm: 0.90...1.10  
mm: (0.40...1.60)

Shutoff  
electromagnet Volt: 12  
5th speed 1/min: 2100  
TD travel mm: 6.90...7.70  
mm: (6.60...8.00)

Shutoff  
electromagnet Volt: 12  
6th speed 1/min: 1500  
TD travel mm: 4.20...4.80  
mm: (3.80...5.20)

Shutoff  
electromagnet Volt: 12

# Supply-pump pressure characteristic:

1st speed 1/min: 2100  
Supply-pump pressure bar: 8.50...9.10

Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 1000

Supply-pump pressure bar: 4.70...5.30  
Shutoff

electromagnet Volt: 12  
3rd speed 1/min: 600  
Supply-pump pressure bar: 3.20...3.80

Shutoff  
electromagnet Volt: 12

# Overflow quantity at overflow valve:

1st speed 1/min: 600  
Shutoff  
electromagnet Volt: 12

Overflow : 41.70...83.40  
quantity cm3/10s: (26.70...98.40)  
2nd speed 1/min: 2100  
Shutoff

electromagnet Volt: 12  
Overflow : 55.60...139.00  
quantity cm3/10s: (40.60...153.00)

# Delivery-quant. and breakaway char.:

2nd speed 1/min: 2600  
Shutoff  
electromagnet Volt: 12

Del. quantity cm3/: 0.00...3.00  
1000S.: (0.00...3.00)

5th speed 1/min: 2300

Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 25.00...29.00  
1000S.: (21.00...33.00)

9th speed 1/min: 2100

Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 42.00...45.00  
1000S.: (41.00...46.00)

12th speed 1/min: 1500

Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 42.50...43.50  
1000S.: (41.00...45.00)

15th speed 1/min: 1000

Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 39.50...42.50  
1000S.: (38.50...43.50)

20th speed 1/min: 600

Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 34.50...38.50  
1000S.: (33.50...39.50)

# Mech. shutoff:

# Electr. shutoff:

1st speed 1/min: 375  
Del. quantity cm3/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: -

# Idle delivery:

1st speed 1/min: 375  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 12.00...16.00  
1000S.: (9.00...19.00)

Dispersion cm3/: 3.0  
1000S.: (3.0)

2nd speed 1/min: 465

Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 0.00...3.00  
1000S.: (0.00...3.00)

# Load-dependent start of delivery:

# Inj.-qty.dif.measurement:

1st speed 1/min: 1000  
Charge press. hPa: '  
Inj.-qty. cm3/ : -16.0...-18.0  
difference 1000S.: (-16.0...-18.0)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1000  
Charge press. hPa: #  
Inj.-qty. cm<sup>3</sup>/: -15.0...-21.0  
difference 1000s.: (-14.0...-22.0)

Shutoff  
electromagnet Volt: 12  
5th speed 1/min: 1000  
Charge press. hPa: \*  
Inj.-qty. cm<sup>3</sup>/: 0.00...2.00  
difference 1000s.: (0.00...2.00)  
Shutoff  
electromagnet Volt: 12

TD-travel dif.measurement:  
correttore anticipo iniezione (SV):  
1st speed 1/min: 1000  
Charge press. hPa: #  
TD-travel : -0.40...-0.60  
difference mm: (-0.40...-0.60)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1000  
Charge press. hPa: \*  
TD-travel : -0.40...-1.40  
difference mm: (-0.40...-1.40)  
Shutoff  
electromagnet Volt: 12

SP press.-dif.measurement:  
pompa di mandata (FP):  
1st speed 1/min: 1000  
Charge press. hPa: '  
Supply pump-  
pressure : -0.10...-0.30  
difference bar: (-0.10...-0.30)  
Shutoff  
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 300  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 55.00...85.00  
1000s.: (55.00...85.00)

2nd speed 1/min: 500  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 25.00...45.00  
1000s.: (25.00...45.00)

4th speed 1/min: 100  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 65.00...105.00  
1000s.: (65.00...105.00)

Shutoff electromagnet:

Cut-in  
min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
K mm: -  
KF mm: 5.8...6.2  
MS mm: 1.7...2.1  
SVS max. mm: -  
Ya mm: 37.9...39.9  
Yb mm: 41.8...47.0

Remarks:

Overflow restriction 0.55 mm - Part No. ..303

Ya = Distance between VE flange and  
speed-control lever in idle  
position

Yb = Distance between VE flange and  
speed-control lever in rated speed  
position

Measurement point = edge of control  
lever on distributor-head end

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : S0F  
Edition : 07.93  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE4/10F2100R557  
Type number : 0 460 404 079  
Customer Part-No. :

Customer-specific information  
Customer : IVECO-SOFIM

Engine : 8140.67.2700

## TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 022

Opening  
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 450

Start of delivery  
Prestroke mm: 0.2  
(from BDC): +0.02(0.04)

Injection-pump setting values  
Test specifications in parentheses

## Timing-device travel

Speed 1/min: 1000  
Setting value mm: 0.90...1.10  
Shutoff  
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1000  
Setting value bar: 4.70...5.30  
Shutoff  
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500  
Del. quantity cm<sup>3</sup>/  
1000S.: 42.50...43.50

Shutoff  
electromagnet Volt: 12  
Dispersion cm<sup>3</sup>/: 3.0  
1000S.: (3.0)

## Low-idle speed regulation

Speed 1/min: 375  
Del. quantity cm<sup>3</sup>/  
1000S.: 12.00...16.00

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 3.0  
1000S.: (3.0)

## Full-load speed regulation

Speed 1/min: 2300  
Del. quantity cm<sup>3</sup>/  
1000S.: 25.00...29.00

Shutoff  
electromagnet Volt: 12

## Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 65.00...105.00  
mind 1000S.: 65.00

Shutoff  
electromagnet Volt: 12

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

Speed 1/min: 1000  
Charge press hPa: 12  
Inj.-qty. cm<sup>3</sup>/  
difference 1000S.: -15.0...-21.00#

Shutoff  
electromagnet Volt: 12  
TD-travel dif.measurement  
correttore anticipo iniezione (SV)

1.Speed 1/min: 1000  
TD-travel  
difference mm: -0.4...-0.60#

Shutoff  
electromagnet Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

# Timing-device characteristic:

1st speed 1/min: 1800  
TD travel mm: 6.10...6.70  
mm: (5.70...7.10)  
electromagnet Volt: 12  
3rd speed 1/min: 1000  
TD travel mm: 0.90...1.10  
mm: (0.40...1.60)

Shutoff  
electromagnet Volt: 12  
5th speed 1/min: 2100  
TD travel mm: 6.90...7.70  
mm: (6.60...8.00)

Shutoff  
electromagnet Volt: 12  
6th speed 1/min: 1500  
TD travel mm: 4.20...4.80  
mm: (3.80...5.20)

Shutoff  
electromagnet Volt: 12

# Supply-pump pressure characteristic:

1st speed 1/min: 2100  
Supply-pump pressure bar: 8.50...9.10  
Shutoff

electromagnet Volt: 12  
2nd speed 1/min: 1000  
Supply-pump pressure bar: 4.70...5.30  
Shutoff

electromagnet Volt: 12  
3rd speed 1/min: 600  
Supply-pump pressure bar: 3.20...3.80  
Shutoff

electromagnet Volt: 12

# Overflow quantity at overflow valve:

1st speed 1/min: 600  
Shutoff  
electromagnet Volt: 12  
Overflow : 41.70...83.40  
quantity cm<sup>3</sup>/10s: (26.70...98.40)  
2nd speed 1/min: 2100  
Shutoff  
electromagnet Volt: 12  
Overflow : 55.60...139.00  
quantity cm<sup>3</sup>/10s: (40.60...153.00)

# Delivery-quant. and breakaway char.:

2nd speed 1/min: 2600  
Shutoff  
electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000s.: (0.00...3.00)  
5th speed 1/min: 2300  
Shutoff

electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 25.00...29.00  
1000s.: (21.00...33.00)

9th speed 1/min: 2100  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 42.00...45.00  
1000s.: (41.00...46.00)

12th speed 1/min: 1500  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 42.50...43.50  
1000s.: (41.00...45.00)

15th speed 1/min: 1000  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 39.50...42.50  
1000s.: (38.50...43.50)

20th speed 1/min: 600  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 34.50...38.50  
1000s.: (33.50...39.50)

# Mech. shutoff:

# Electr. shutoff:

1st speed 1/min: 375  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000s.: (0.00...3.00)

Shutoff  
electromagnet volt: -

# Idle delivery:

1st speed 1/min: 375  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 12.00...16.00  
1000s.: (9.00...19.00)

Dispersion cm<sup>3</sup>/: 3.0  
1000s.: (3.0)  
2nd speed 1/min: 465  
Shutoff

electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000s.: (0.00...3.00)

# Load-dependent start of delivery: Inj.-qty.dif.measurement:

1st speed 1/min: 1000  
Charge press. hPa: '  
Inj.-qty. cm<sup>3</sup>/ : -16.0...-18.0  
difference 1000s.: (-16.0...-18.0)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1000  
Charge press. hPa: #  
Inj.-qty. cm3/: -15.0...-21.0  
difference 1000S.: (-14.0...-22.0)

Shutoff  
electromagnet Volt: 12  
5th speed 1/min: 1000  
Charge press. hPa: \*  
Inj.-qty. cm3/: 0.00...2.00  
difference 1000S.: (0.00...2.00)  
Shutoff  
electromagnet Volt: 12

TD-travel dif.measurement:  
correttore anticipo iniezione (SV):  
1st speed 1/min: 1000  
Charge press. hPa: #  
TD-travel : -0.40...-0.60  
difference mm: (-0.40...-0.60)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1000  
Charge press. hPa: \*  
TD-travel : -0.40...-1.40  
difference mm: (-0.40...-1.40)  
Shutoff  
electromagnet Volt: 12

SP press.-dif.measurement:  
pompa di mandata (FP):  
1st speed 1/min: 1000  
Charge press. hPa: '  
Supply pump-  
pressure : -0.10...-0.30  
difference bar: (-0.10...-0.30)  
Shutoff  
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 300  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 55.00...85.00  
1000S.: (55.00...85.00)

2nd speed 1/min: 500  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 25.00...45.00  
1000S.: (25.00...45.00)

4th speed 1/min: 100  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 65.00...105.00  
1000S.: (65.00...105.00)

Shutoff electromagnet:

Cut-in  
min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
K mm: -  
KF mm: 5.6...6.0  
MS mm: 1.7...1.9  
SVS max. mm: -  
Ya mm: 37.9...39.9  
Yb mm: 41.8...47.0

Remarks:

:  
:  
:  
Overflow restriction 0.55 mm - Part No.  
..303

Ya = Distance between VE flange and  
speed-control lever in idle  
position

Yb = Distance between VE flange and  
speed-control lever in rated speed  
position

Measurement point = edge of control  
lever on distributor-head end

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV  
Edition : 07.92  
replaces : -  
Calibrating oil : ISO-4113  
Injection pump : VE6/10F2150L470  
Type number : 0 460 406 073  
Customer Part-No. :

Customer-specific information  
Customer : VW

Engine : 075.2 (2.4L.)

## TEST BENCH REQUIREMENTS

Overflow restricti: 1 469 456 303

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 000

Opening  
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 840

Start of delivery  
Prestroke mm: -  
(from BDC): -

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250  
Charge press. hPa: 750  
Setting value mm: 2.20...2.60  
Shutoff  
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250  
Charge press hPa: 750  
Setting value bar: 5.20...5.80  
Shutoff  
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1250  
Charge press. hPa: 750  
Del. quantity cm3/  
1000S.: 41.50...42.50

Shutoff  
electromagnet Volt: 12  
Dispersion cm3/: 2.5  
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 600  
Del. quantity cm3/  
1000S.: 24.50...25.50

Shutoff  
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 375  
Del. quantity cm3/  
1000S.: 7.00...9.00

Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 2.0  
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2250  
Charge press hPa: 750  
Del. quantity cm3/  
1000S.: 10.00...14.00

Shutoff  
electromagnet Volt: 12

Start:

Speed 1/min: 100  
Del. quantity cm3/: 35.00...65.00  
mind 1000S.: 35.00

Shutoff  
electromagnet Volt: 12

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

Speed 1/min: 1250  
Inj.-qty. cm3/  
difference 1000S.: -1.00...-5.00 +



Shutoff  
electromagnet Volt: 12  
TD-travel dif.measurement  
correttore anticipo iniezione (SV)  
1.Speed 1/min: 1250

TD-travel  
difference mm: -0.6...-0.80+

Shutoff  
electromagnet Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1600  
Charge press hPa: 750  
TD travel mm: 4.00...4.80  
mm: (3.70...5.10)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1250  
Charge press hPa: 750  
TD travel mm: 2.20...2.60  
mm: (1.70...3.10)

Shutoff  
electromagnet Volt: 12  
4th speed 1/min: 1000  
Charge press hPa: 750  
TD travel mm: 0.60...1.40  
mm: (0.30...1.70)

Shutoff  
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 600  
Charge press. hPa: 750  
Supply-pump  
pressure bar: 3.30...3.90

Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 1250  
Charge press. hPa: 750  
Supply-pump  
pressure bar: 5.20...5.80

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 2000  
Charge press. hPa: 750  
Supply-pump  
pressure bar: 7.50...8.10

Shutoff  
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600  
Charge press. hPa: -

Shutoff  
electromagnet Volt: 12  
Overflow : 41.70...83.40  
quantity cm<sup>3</sup>/10s: (27.80...97.30)  
2nd speed 1/min: 2000  
Charge press. hPa: 750  
Shutoff  
electromagnet Volt: 12  
Overflow : 55.60...138.90  
quantity cm<sup>3</sup>/10s: (41.70...152.90)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 750\*  
Charge-air pressure-setting  
point hPa: 350  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/ : 34.00...35.00  
1000S.: (31.50...37.50)

2nd speed 1/min: 2400  
Charge press. hPa: 750  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/ : 0.00...6.00  
1000S.: (0.00...6.00)

5th speed 1/min: 2250  
Charge press. hPa: 750  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/ : 10.00...14.00  
1000S.: (8.00...16.00)

8th speed 1/min: 2175  
Charge press. hPa: 750  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/ : 19.00...29.00  
1000S.: (18.00...30.00)

9th speed 1/min: 2000  
Charge press. hPa: 750  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/ : 35.60...35.60  
1000S.: (33.40...37.80)

10th speed 1/min: 1750  
Charge press. hPa: 750  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/ : 36.60...38.60  
1000S.: (35.40...39.80)

12th speed 1/min: 1250  
Charge press. hPa: 750  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/ : 41.50...42.50  
1000S.: (39.80...44.20)

18th speed 1/min: 600  
Charge press. hPa: -

Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 24.50...25.50  
                   1000S.: (22.00...28.00)  
 20th speed 1/min: 600  
 Charge press. hPa: 750  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 37.70...40.70  
                   1000S.: (36.20...42.20)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 375  
 Del. quantity cm<sup>3</sup>/: 0.00...3.00  
                   1000S.: (0.00...3.00)

Shutoff  
 electromagnet volt: -

Idle delivery:

1st speed 1/min: 375  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 7.00...9.00  
                   1000S.: (4.00...12.00)

Dispersion cm<sup>3</sup>/: 2.0  
                   1000S.: (3.0)

2nd speed 1/min: 500  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 0.00...4.00  
                   1000S.: (0.00...4.00)

Load-dependent start of delivery:  
 Inj.-qty.dif.measurement:

1st speed 1/min: 1250  
 Inj.-qty. cm<sup>3</sup>/: -0.5...-1.50'  
 difference 1000S.: (-0.50...-1.50)

Shutoff  
 electromagnet Volt: 12  
 3rd speed 1/min: 1250  
 Inj.-qty. cm<sup>3</sup>/: -1.0...-5.00+  
 difference 1000S.: (1.00...-7.00)

Shutoff  
 electromagnet Volt: 12  
 5th speed 1/min: 1250  
 Inj.-qty. cm<sup>3</sup>/: 0.00...3.00 \*  
 difference 1000S.: (0.00...3.00)  
 Shutoff  
 electromagnet Volt: 12

TD-travel dif.measurement:  
 correttore anticipo iniezione (SV):  
 1st speed 1/min: 1250  
 TD-travel : -0.6...-0.80+  
 difference mm: (-0.60...-0.80)

Shutoff  
 electromagnet Volt: 12  
 3rd speed 1/min: 1250  
 TD-travel : -1.1...-1.50\*  
 difference mm: (-0.80...-1.80)  
 Shutoff  
 electromagnet Volt: 12

SP press.-dif.measurement:  
 pompa di mandata (FP):  
 1st speed 1/min: 1250  
 Supply pump-  
 pressure : -0.1...-0.30'  
 difference bar: (-0.10...-0.30)

Shutoff  
 electromagnet Volt: 12  
 3rd speed 1/min: 1250  
 Supply pump-  
 pressure : -0.5...-0.90\*  
 difference bar: (-0.30...-1.10)

Shutoff  
 electromagnet Volt: 12  
 4th speed 1/min: 1250

Automatic starting fuel delivery:

1st speed 1/min: 320  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 35.00...75.00  
                   1000S.: (35.00...75.00)

2nd speed 1/min: 520  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 15.00...35.00  
                   1000S.: (15.00...35.00)

4th speed 1/min: 100  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 35.00...65.00  
                   1000S.: (35.00...65.00)

Shutoff electromagnet:

Cut-in  
 min voltage : 10.0  
 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
 K mm: 3.3...3.5  
 KF mm: 6.5...6.7  
 MS mm: 1.1...1.5  
 SVS max. mm: -  
 Ya mm: 31.5...33.5  
 Yb mm: 51.0...63.3

Remarks:

:

Ya = Distance between VE flange and  
speed-control lever in idle  
position

Yb = Distance between VE flange and  
speed-control lever in rated speed  
position

Measurement point = edge of control  
lever on distributor-head end

Operate control lever after each  
manifold-pressure compensator pressure  
change.

\* Correction at adjusting nut

y y

FEHLENDE TEXT ÜBERSETZEN

y

y

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV  
Edition : 07.93  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE6/10F2150L398  
Type number : 0 460 406 075  
Customer Part-No. :

Customer-specific information  
Customer : VW

Engine : 075.1 (2.4L)

## TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 000

Opening  
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 840

Start of delivery  
Prestroke mm: -  
(from BDC): -

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500  
Setting value mm: 4.40...4.80  
Shutoff  
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1500  
Setting value bar: 6.00...6.60  
Shutoff  
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1250  
Del. quantity cm3/  
1000S.: 30.00...31.00  
Shutoff  
electromagnet Volt: 12  
Dispersion cm3/: 2.5  
1000S.: (3.0)

Low-idle speed regulation

Speed 1/min: 375  
Del. quantity cm3/  
1000S.: 7.00...9.00  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 2.0  
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2325  
Del. quantity cm3/  
1000S.: 10.00...14.00  
Shutoff  
electromagnet Volt: 12

Start:

Speed 1/min: 100  
Del. quantity cm3/: 35.00...65.00  
mind 1000S.: 35.00  
Shutoff  
electromagnet Volt: 12

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

Speed 1/min: 1500  
Inj.-qty. cm3/  
difference 1000S.: -8.00...-12.00#  
Shutoff  
electromagnet Volt: 12  
TD-travel dif.measurement  
correttore anticipo iniezione (SV)  
1.Speed 1/min: 1500  
TD-travel  
difference mm: -0.6...-0.80#  
Shutoff  
electromagnet Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

# Timing-device characteristic:

2nd speed 1/min: 1700  
TD travel mm: 5.10...5.90  
mm: (4.80...6.20)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1500  
TD travel mm: 4.40...4.80  
mm: (3.90...5.30)

Shutoff  
electromagnet Volt: 12  
4th speed 1/min: 1000  
TD travel mm: 1.80...2.60  
mm: (1.50...2.90)

Shutoff  
electromagnet Volt: 12  
5th speed 1/min: 2150  
TD travel mm: 6.20...7.00  
mm: (5.90...7.30)

Shutoff  
electromagnet Volt: 12

# Supply-pump pressure characteristic:

1st speed 1/min: 750  
Supply-pump pressure bar: 3.80...4.40

Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 1500  
Supply-pump pressure bar: 6.00...6.60

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 2150  
Supply-pump pressure bar: 7.90...8.50

Shutoff  
electromagnet Volt: 12

# Overflow quantity at overflow valve:

1st speed 1/min: 750  
Shutoff  
electromagnet Volt: 12  
Overflow quantity cm<sup>3</sup>/10s: 41.70...83.40  
(27.80...97.30)

2nd speed 1/min: 2150  
Shutoff  
electromagnet Volt: 12  
Overflow quantity cm<sup>3</sup>/10s: 55.60...138.90  
(41.70...152.90)

# Delivery-quant. and breakaway char.:

2nd speed 1/min: 2500  
Shutoff  
electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

5th speed 1/min: 2325  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 10.00...14.00  
1000S.: (8.00...16.00)

8th speed 1/min: 2275  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 14.50...24.50  
1000S.: (13.50...25.50)

9th speed 1/min: 2150  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 21.00...23.00  
1000S.: (19.80...24.20)

10th speed 1/min: 1850  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 22.70...25.30  
1000S.: (21.00...27.00)

12th speed 1/min: 1250  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 30.00...31.00  
1000S.: (28.20...32.70)

20th speed 1/min: 750  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 26.50...29.50  
1000S.: (25.00...31.00)

# Mech. shutoff:

# Electr. shutoff:

1st speed 1/min: 375  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: -

# Idle delivery:

1st speed 1/min: 375  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 7.00...9.00  
1000S.: (4.00...12.00)

Dispersion cm<sup>3</sup>/: 2.0  
1000S.: (3.0)

2nd speed 1/min: 500  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

# Load-dependent start of delivery: Inj.-qty.dif.measurement:

1st speed 1/min: 1500  
 Charge press. hPa: '  
 Inj.-qty. cm<sup>3</sup>/ : -6.50...-8.50  
 difference 1000S.: (-6.50...-8.50)  
 Shutoff  
 electromagnet Volt: 12  
 3rd speed 1/min: 1500  
 Charge press. hPa: #  
 Inj.-qty. cm<sup>3</sup>/: -8.0...-12.00  
 difference 1000S.: (-6.0...-14.00)  
 Shutoff  
 electromagnet Volt: 12  
 5th speed 1/min: 1500  
 Charge press. hPa: \*  
 Inj.-qty. cm<sup>3</sup>/: 0.00...3.00  
 difference 1000S.: (0.00...3.00)  
 Shutoff  
 electromagnet Volt: 12

TD-travel dif.measurement:  
 correttore anticipo iniezione (SV):  
 1st speed 1/min: 1500  
 Charge press. hPa: #  
 TD-travel : -0.60...-0.80  
 difference mm: (-0.60...-0.80)  
 Shutoff  
 electromagnet Volt: 12  
 3rd speed 1/min: 1500  
 Charge press. hPa: \*  
 TD-travel : -1.10...-1.50  
 difference mm: (-0.80...-1.80)  
 Shutoff  
 electromagnet Volt: 12

SP press.-dif.measurement:  
 pompa di mandata (FP):  
 1st speed 1/min: 1500  
 Charge press. hPa: '  
 Supply pump-  
 pressure : -0.10...-0.30  
 difference bar: (-0.20...-0.20)  
 Shutoff  
 electromagnet Volt: 12  
 3rd speed 1/min: 1500  
 Charge press. hPa: \*  
 Supply pump-  
 pressure : -0.50...-0.90  
 difference bar: (-0.30...-1.10)  
 Shutoff  
 electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 300  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 35.00...75.00  
 1000S.: (35.00...75.00)

2nd speed 1/min: 500  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 15.00...35.00  
 1000S.: (15.00...35.00)

4th speed 1/min: 100  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 35.00...65.00  
 1000S.: (35.00...65.00)

Shutoff electromagnet:

Cut-in  
 min voltage : 10.0  
 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation	
K	mm: 3.2...3.4
KF	mm: 6.3...6.7
MS	mm: 1.3...1.7
Ya	mm: 31.5...33.5
Yb	mm: 51.2...63.4

Remarks:

Overflow restriction 0.55 mm - Part No. ..303

Ya = Distance between VE flange and  
 speed-control lever in idle  
 position

Yb = Distance between VE flange and  
 speed-control lever in rated speed  
 position

Measurement point = edge of control  
 lever on distributor-head end

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR 2,5  
Edition : 07.07.93  
replaces : 16.02.91  
Calibrating oil : ISO-4113

Injection pump : VE4/11F2000R415  
Type number : 0 460 414 083  
Customer Part-No. :

Customer-specific information  
Customer : FORD (1)=NLK

Engine : 2.5l DI(2)= OHNE NLK

## TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil  
return temp. °C  
with thermometer : 44.00...46.00  
Electronically : 44.00...46.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 114

Opening  
Pressure bar: 207.00...210.00

Perforated-plate  
diameter mm: 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 450

Start of delivery block  
Piston stroke mm: 0.35  
mm: 0.30...0.40  
Outlet : B

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250  
Setting value mm: 4.20...4.60

Shutoff  
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250  
Setting value bar: 6.90...7.50(1)  
Shutoff  
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 500  
Del. quantity cm3/  
1000s.: 25.80...26.20 F

Shutoff  
electromagnet Volt: 12  
Dispersion cm3/: 3.0  
1000s.: (4.0)

Low-idle speed regulation

Speed 1/min: 425  
Del. quantity cm3/  
1000s.: 6.00...8.00

Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 3.0  
1000s.: (4.0)

Full-load speed regulation

Speed 1/min: 2200  
Del. quantity cm3/  
1000s.: 23.20...25.20

Shutoff  
electromagnet Volt: 12  
Dispersion cm3/: 3.0  
1000s.: (4.0)

Start:

Speed 1/min: 100  
Del. quantity cm3/: 45.00...85.00  
mind 1000s.: 45.00  
Shutoff  
electromagnet Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 2000  
Charge press hPa: (1)  
TD travel mm: 7.40...8.20  
mm: (7.10...8.60)  
electromagnet Volt: 12  
2nd speed 1/min: 1250  
Charge press hPa: (1)

TD travel mm: 4.20...4.60  
mm: (3.90...4.90)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 800  
Charge press hPa: (1)  
TD travel mm: 1.70...2.50  
mm: (1.40...2.80)

Shutoff  
electromagnet Volt: 12  
4th speed 1/min: 2000  
Charge press hPa: (2)  
TD travel mm: 7.50...8.30  
mm: (7.20...8.60)

Shutoff  
electromagnet Volt: 12  
5th speed 1/min: 1250  
Charge press. hPa: (2)  
TD travel mm: 4.20...4.60  
mm: (3.90...4.90)

Shutoff  
electromagnet Volt: 12  
6th speed 1/min: 800  
Charge press. hPa: (2)  
TD travel mm: 2.00...2.80  
mm: (1.70...3.10)

Shutoff  
electromagnet Volt: 12

#### Supply-pump pressure characteristic:

1st speed 1/min: 500  
Supply-pump  
pressure bar: (1) 5.2...5.8  
bar: (2) 4.4...5.0

Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 1000  
Supply-pump  
pressure bar: (1) 6.4...7.0  
bar: (2) 5.7...6.3

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1250  
Supply-pump  
pressure bar: (1) 6.9...7.5  
bar: (2) 6.2...6.8

Shutoff  
electromagnet Volt: 12  
4th speed 1/min: 2000  
Supply-pump  
pressure bar: (1) 8.6...9.2  
bar: (2) 7.8...8.4

Shutoff  
electromagnet Volt: 12

#### Overflow quantity at overflow valve:

1st speed 1/min: 500

Shutoff  
electromagnet Volt: 12  
Overflow : 97.30...141.70  
quantity cm<sup>3</sup>/10s: (82.30...156.70)  
2nd speed 1/min: 1950  
Shutoff  
electromagnet Volt: 12  
Overflow : 115.30...184.80  
quantity cm<sup>3</sup>/10s: (100.30...199.80)

#### Delivery-quant. and breakaway char.:

1st speed 1/min: 1950  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 36.00...38.40 D  
1000s.: (34.70...39.70) D

2nd speed 1/min: 2400  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 0.00...5.00  
1000s.: -

5th speed 1/min: 2200  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 23.20...25.20  
1000s.: (19.20...29.20)

8th speed 1/min: 2100  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 30.50...36.50  
1000s.: (27.50...39.50)

9th speed 1/min: 1950  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 36.00...38.40  
1000s.: (34.70...39.70)

10th speed 1/min: 1700  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 36.50...38.90  
1000s.: (35.20...40.20)

11th speed 1/min: 1000  
Del. quantity cm<sup>3</sup>/: 32.20...33.20 E  
1000s.: (30.20...35.20) E

12th speed 1/min: 500  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 25.80...26.20 F  
1000s.: (23.00...29.00) F

#### Mech. shutoff:

#### Electr. shutoff:

1st speed 1/min: 425  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000s.: (0.00...3.00)



Shutoff  
electromagnet volt: -

Idle delivery:

1st speed 1/min: 425

Shutoff

electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 6.00...8.00  
1000S.: (3.00...11.00)

Dispersion cm<sup>3</sup>/: 3.0  
1000S.: (4.0)

2nd speed 1/min: 500

Shutoff

electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: (1) 0.0...6.0  
1000S.: (2) 2.0...10.0

Part-load del. at 3rd inj.-qty.

terza fermo della portata

stop (EGR set)

scarico) (ARF)

gaz d'échappement-ARF)

Spacing mm: 20.0

1st speed 1/min: 1250

Shutoff

electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 18.00...19.00  
1000S.: (16.00...21.00)

Automatic starting fuel delivery:

1st speed 1/min: 300

Shutoff

electromagnet volt: 12

Del. quantity cm<sup>3</sup>/: 40.00...70.00  
1000S.: (40.00...70.00)

2nd speed 1/min: 420

Shutoff

electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 21.00...31.00  
1000S.: (21.00...31.00)

4th speed 1/min: 100

Shutoff

electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 45.00...85.00  
1000S.: (45.00...85.00)

Shutoff electromagnet:

Cut-in

min voltage : 10.0

Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

N23

K	mm: 2.7...2.9
KF	mm: K-OT
MS	mm: 1.8
TLA-ē	mm: 2.5
Ya	mm: 42.8...45.8
Yb	mm: 60.0...72.0

Remarks:

:  
:

Pump/engine assignment:  
Attach timing-device cover KDEP 1151.  
Plunger lift in blocking position =  
0.30...  
0.40 mm referenced to outlet "B".

Ya = Distance between VE flange and  
speed-control lever in idle  
position

Yb = Distance between VE flange and  
speed-control lever in rated speed  
position

Measurement point = edge of control  
lever on distributor-head end

F = Adjustment point for low full-load  
delivery

E = Fuel-delivery adjustment point in  
HBA range. (Correction by way of HBA  
adjusting screw).

D = Adjustment point for high full-  
load delivery

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN  
Edition : 07.93  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE6/11F1350R417-4  
Type number : 0 460 416 074  
Customer Part-No. :

Customer-specific information  
Customer : MAN

Engine : D 0826 GF 04

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 109

Opening  
Pressure bar: 207.00...210.00

Perforated-plate  
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 840

Start of delivery  
Prestroke mm: 0.61  
(from BDC): ±0.02(0.04)

Injection-pump setting values  
Test specifications in parentheses

## Timing-device travel

Speed 1/min: 1100  
Setting value mm: 2.00...2.40  
Shutoff  
electromagnet Volt: 24

## Supply-pump pressure

Speed 1/min: 1100  
Setting value bar: 5.90...6.50  
Shutoff  
electromagnet Volt: 24

## Full-load del. with charge press.:

Speed 1/min: 1000  
Del. quantity cm3/  
1000S.: 83.00...84.00  
Shutoff  
electromagnet Volt: 24  
Dispersion cm3/: 4.0  
1000S.: (4.5)

## Low-idle speed regulation

Speed 1/min: 300  
Del. quantity cm3/  
1000S.: 7.00...13.00  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm3/: 6.0  
1000S.: (6.5)

## Full-load speed regulation

Speed 1/min: 1410  
Del. quantity cm3/  
1000S.: 57.00...63.00  
Shutoff  
electromagnet Volt: 24

## Start:

Speed 1/min: 100  
Del. quantity cm3/: -  
mind 1000S.: 57.00  
Shutoff  
electromagnet Volt: 24

## Inspection-pump test specifications Test specifications in parentheses

## Timing-device characteristic:

2nd speed 1/min: 1200  
TD travel mm: 2.80...3.60  
mm: (2.50...3.90)  
Shutoff  
electromagnet Volt: 24  
3rd speed 1/min: 1100  
TD travel mm: 2.00...2.40  
mm: (1.50...2.90)  
Shutoff  
electromagnet Volt: 24  
4th speed 1/min: 1000

TD travel mm: 0.80...1.60  
 mm: (0.50...1.90)  
 Shutoff  
 electromagnet Volt: 24  
 5th speed 1/min: 1350  
 TD travel mm: 3.70...4.50  
 mm: (3.70...4.50)  
 Shutoff  
 electromagnet Volt: 24  
 Supply-pump pressure characteristic:  
 1st speed 1/min: 600  
 Supply-pump pressure bar: 2.80...3.40  
 Shutoff  
 electromagnet Volt: 24  
 2nd speed 1/min: 1100  
 Supply-pump pressure bar: 5.90...6.50  
 Shutoff  
 electromagnet Volt: 24  
 3rd speed 1/min: 1350  
 Supply-pump pressure bar: 7.40...8.00  
 Shutoff  
 electromagnet Volt: 24  
 Overflow quantity at overflow valve:  
 1st speed 1/min: 600  
 Shutoff  
 electromagnet Volt: 24  
 Overflow : 41.70...83.40  
 quantity cm<sup>3</sup>/10s: (26.70...98.40)  
 2nd speed 1/min: 1350  
 Shutoff  
 electromagnet Volt: 24  
 Overflow : 55.60...139.00  
 quantity cm<sup>3</sup>/10s: (40.60...153.00)  
 Delivery-quant. and breakaway char.:  
 2nd speed 1/min: 1550  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 0.00...3.00  
 1000S.: (0.00...3.00)  
 3rd speed 1/min: 1500  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 0.00...15.00  
 1000S.: (0.00...15.00)  
 4th speed 1/min: 1450  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 15.00...45.00  
 1000S.: (15.00...45.00)  
 5th speed 1/min: 1410

Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 57.00...63.00  
 1000S.: (55.50...64.50)  
 9th speed 1/min: 1350  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 77.50...80.50  
 1000S.: (76.00...82.00)  
 12th speed 1/min: 1100  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 81.50...82.50  
 1000S.: (79.50...84.50)  
 15th speed 1/min: 850  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 81.00...85.00  
 1000S.: (79.50...86.50)  
 20th speed 1/min: 600  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 57.00...63.00  
 1000S.: (56.00...64.00)

Mech. shutoff:  
 Mech. Abstellung:

1st speed 1/min: 1350  
 Del. quantity cm<sup>3</sup>/: 0.00...3.00  
 1000S.: (0.00...3.00)

Shutoff  
 electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 300  
 Del. quantity cm<sup>3</sup>/: 0.00...3.00  
 1000S.: (0.00...3.00)

Shutoff  
 electromagnet volt: -

Idle delivery:

1st speed 1/min: 300  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 7.00...13.00  
 1000S.: (5.00...15.00)

Dispersion cm<sup>3</sup>/: 6.0  
 1000S.: (6.5)

2nd speed 1/min: 450  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 0.00...3.00  
 1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 300

Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 65.00...125.00  
1000S.: (65.00...125.00)

2nd speed 1/min: 480  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 40.00...70.00  
1000S.: (40.00...70.00)

3rd speed 1/min: 100  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 64.00...66.00  
1000S.: (57.00...73.00)

Shutoff electromagnet:

Cut-in  
min voltage : 20.0  
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: 5.3...5.5
MS	mm: -
SVS max.	mm: 0.6
Ya	mm: 37.4...40.4
Yb	mm: 40.2...45.8

Remarks:

: MAN 51.1110 3-7215

Permissible port/port scatter with  
stop test, mechanical = max. 5.0  
ccm/1000 S.

Permissible port/port scatter with  
stop test, electrical = max. 5.0  
ccm/1000 S.

Ya = Distance between VE flange and  
speed-control lever in idle  
position

Yb = Distance between VE flange and  
speed-control lever in rated speed  
position

Measurement point = edge of control  
lever on distributor-head end

Overflow restriction 0.55 mm - Part No.  
..303